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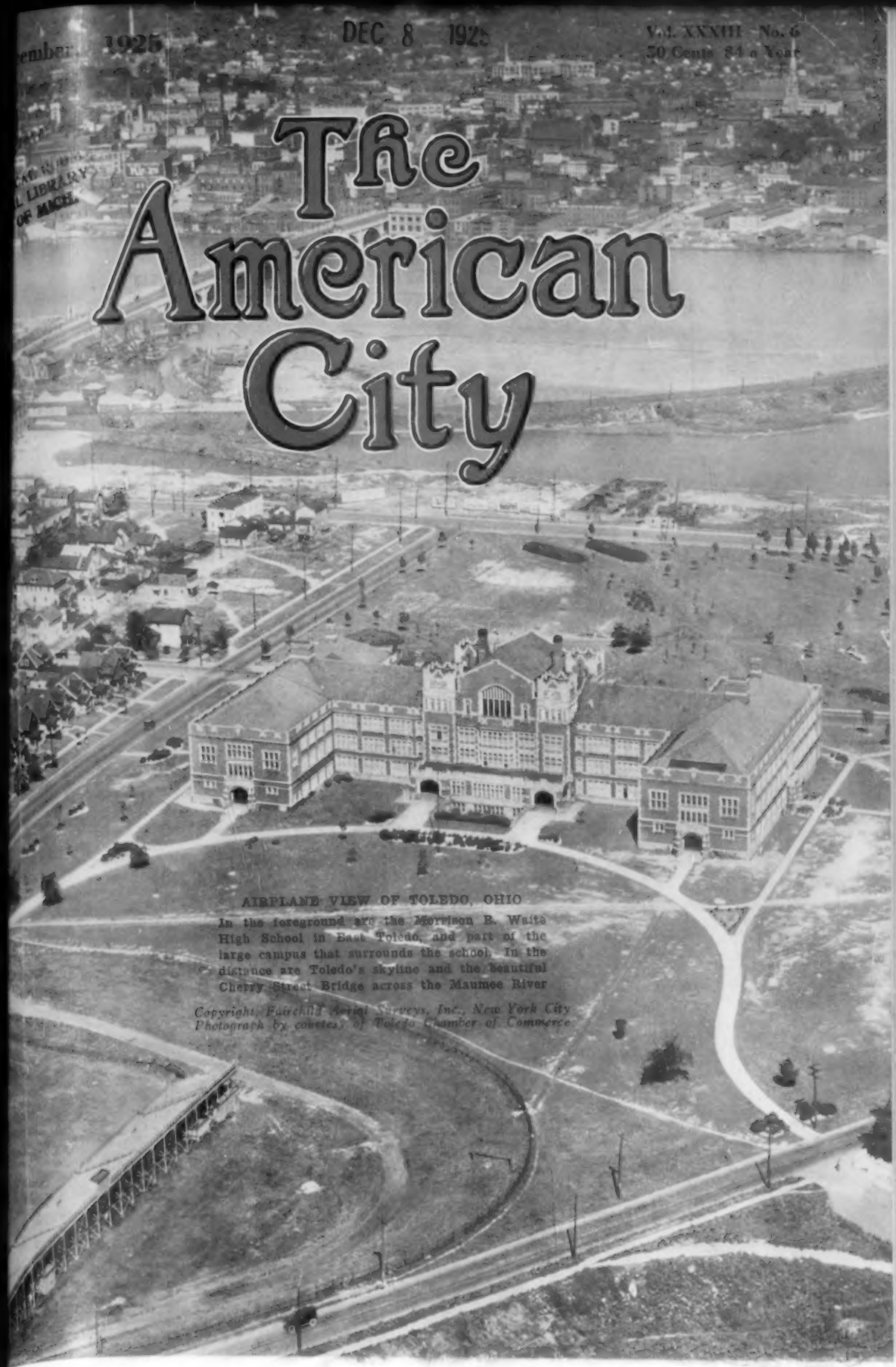

AIRPLANE VIEW OF TOLEDO, OHIO

In the foreground are the Morrison R. Waite High School in East Toledo and part of the large campus that surrounds the school. In the distance are Toledo's skyline and the beautiful Cherry Street Bridge across the Maumee River

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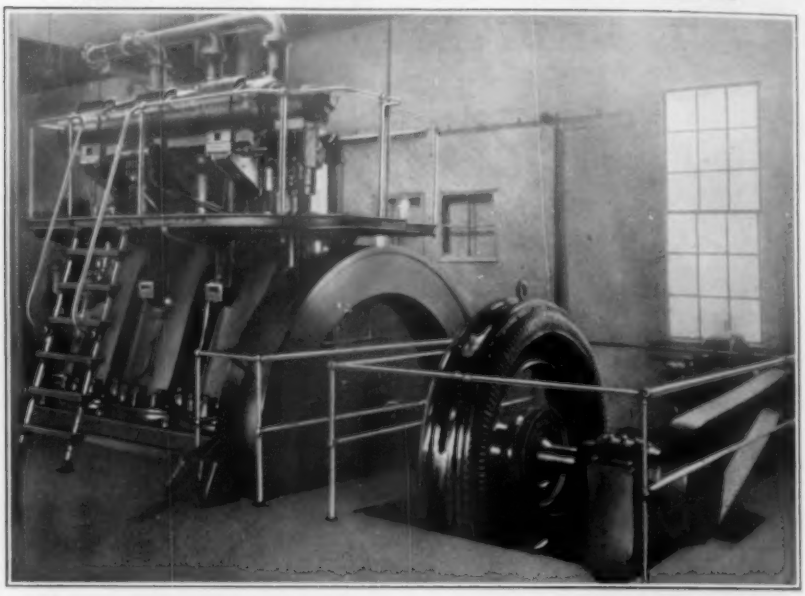
Photograph by courtesy of Toledo Chamber of Commerce

FULTON DIESEL



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Thin-skinned Politicians and Hard-headed Reformers

URGING abandonment of the notion that the professional politician is necessarily the mortal enemy of municipal reform, a strong plea has been voiced by Walter Lippmann for "watchful but slightly suspicious cooperation" between reform movements and political machines. The occasion of this practical advice by the chief editorial writer of the New York *World* was an address in Pittsburgh last month before the joint annual convention of the National Municipal League, American Civic Association, National Association of Civic Secretaries, Governmental Research Conference and Proportional Representation League.

That the accepted ideal of the sovereign and omnicompetent citizen is a false and misleading one, and that the failure to achieve it has produced the current disenchantment in our political life, are the basic themes of Mr. Lippmann's new book, "The Phantom Public."* Developing this thesis in his Pittsburgh speech, Mr. Lippmann showed that a really thorough knowledge of and sustained interest in public affairs is now beyond the competence of practically everybody. "The best anyone can do is to know a little about something and very little about the rest." This is one of the reasons why political organization in a democracy has its roots so deep in necessity and habit that permanent abolition of the machine is an impossible ideal.

But these limitations of human capacity have been too generally ignored by municipal reform movements, whose hopes have been based on occasional uprisings to bring about "the rescue of the distressed maiden from the clutches of the machine politicians by the pure and noble independent."

Twenty or even ten years ago there was, in Mr. Lippmann's opinion, a good deal of justification for campaigns of reform based on the premise that American party organization is incapable of furnishing good government. But a new day is gradually dawning. The younger generation of machine politicians includes many men of education and culture, and with a social outlook very different from that of their predecessors.

"It can be summed up by saying that the machine politician is ceasing to be a thick-skinned social outcast—outcast because he is predatory, and predatory because he is outcast. He is becoming instead a somewhat thin-skinned person, anxious to stand in well with the newspapers and the leaders of his community. . . . With this vastly increased sensitiveness to the opinion of the community, there has come a realization on the part of the leading machine politicians that the old job-grafting type of government was not such very good politics after all, and that the things reformers want are not necessarily contrary to human nature."

It follows, in Mr. Lippmann's judgment, that the notion must be abandoned that the prelude to reform must be the destruction of the machine. Instead, the machine should be recognized by hard-headed reformers as being "capable of expanding, from an institution that humanizes the law in detail, to an institution that may assimilate and make its own, and therefore put into practice, the things you are working for. . . . If the experiment turns out well, we shall have put behind reform the vast human power of political organization. If the experiment fails, we shall certainly be no worse off than we are now."

* Reviewed briefly on page 691. See also in this issue of THE AMERICAN CITY (page 592) "The Reformer, the Boss and the Leader," by William Bennett Munro; and (page 677) "The City and the Educated Citizen," by Robert Ridgway. Mr. Lippmann's Pittsburgh address will be published in full in the January number of the

GOLF COURSE IN RESERVOIR PARK, HARRISBURG, PA.

Harrisburg's Park and River-Front Development

By J. Horace McFarland, L.H.D.
Secretary, Municipal League of Harrisburg; Past President, American Civic Association

THE city of Harrisburg, Pa., had on November 1, 1925, 1,054 acres of publicly owned and administered park lands, divided into six parcels. This area shows the development of an opportunity due to wise and brilliant original planning that ought to be the basis of every park *system*, as distinguished from a mere collection of parks.

With this statement I will drop statistics, which are always a bore, and speak of Harrisburg's parks in terms of humanity.

The old definition of a public park is all too slowly changing. It was formerly a place primarily for the resort of the well-to-do, in which adornment according to all available resources was accomplished by means of sleek walks, fine or near-fine statues, formal flowerbeds, and various other architectural and artificial productions and accomplishments intended primarily for ornament. The modern and better conception, not yet wholly accepted, makes a public park a place of first aid to the civically injured, in that it gives him—or usually her—access to green grass most of the year, to trees and shrubs, to blue sky overhead, and to a basis of recreation. From that wisest of park men, George A. Parker, comes the further distinction that this modern Heaven-born park contains two suggestions, the first of which is that of rest, and the second that of recreational activity. Sometimes with sufficient inspired skill the park man combines these uses, and he has a place for active play, while close by there are accommodations for helpful rest.

Now, because Warren H. Manning conceived the Harrisburg park system when it wasn't a system, this city has gone far toward serving the people rather than the wealthy man. It has, indeed, made only one lapse from the purity of its plan, and that by reason of neglect to avail itself of the advice of the able man who planned the system. In a recent extension of its extraordinary river-front park, every foot of which is needed to serve those who come from the crowded streets and alleys nearby, there has been introduced a "sunken garden," while several "memorials" of minor significance and quality turn that section of this important park into a sort of graveyard. (I am compelled in candor to admit that the sunken garden has made good, for it is extensively visited.)

Incidentally, one of the dangers that must be constantly met by any man who loves his fellow man enough to work toward parks for the recreation of that fellow man, is this disposition to use any little bit of public open space for some expensive erection to glorify some man or group, without advantage to the community as a whole. The place for those statues or monuments is either along a dignified street, or, frankly, in the cemetery, where they mostly belong. I believe I take more credit to myself for one achievement in respect to Harrisburg's

—which is that, working with others, I was able to prevent the city from placing at the one most important intersection of the river-front park with the city's State Street (which establishes a horizontal axis for the system) three bronze figurines which had been discarded by a chocolate magnate, who believed them too costly for his private garden, but found the municipality in the usual attitude of city mendicancy—willing to accept anything given to it, regardless of use or importance. The figurines are now where they are fairly effective, but they are not where the sculptor wanted them to be.

Accessibility of Parks to People

Harrisburg's park system has as its most commendable quality its access to the people who pay for it and who need it. The river-front park of which I have spoken runs along more than three miles of the city's water-front, and not only gives pleasure to hundreds of thousands who would not otherwise get to see the notable river and mountain scenery here visible, but permanently protects that river scenery from public or private aggression in a fashion almost unique in America. The step front of this park, about which a very picturesque story could be told if there was space, is a further advantage.

The next item of primary value is found in Reservoir Park, of less than a hundred acres, and including three reservoirs, which dominate it but do not seriously injure it. It is opposite the center of the city, is accessible in not more than fifteen minutes to most of the population, and provides some organized play opportunity, with a large and well-used rest and scenic opportunity. From its highest points the views are soothing and lovely, and it was while standing on one of these eminences that a prominent Pacific Coast boomer told me his hat was off to Pennsylvania, for even in Los Angeles, from which he came, there was no such lovely and restful scenery within view.

The major acreage item in Harrisburg's park system is Wildwood Park, as yet only slightly availed of, but of vast potential value. It is one of the notable wild natural parks of the East, and its more than five hundred acres include a lake which, while made by the hand of man, gives evidence of his efforts only in the spillway dam, which likewise makes it

THE STEPS ALONG HARRISBURG'S RIVER-FRONT PARK

ABOVE THE STEPS IN THE RIVER-FRONT PARK AT HARRISBURG

a most important and valuable flood-prevention achievement. This park and lake parallel the city's length about a mile from the Susquehanna River, and population is rapidly growing up to use it directly from the west, while there is a certainty that it will early be surrounded on the east. Meantime, it is a superb natural open playground, and the driveways through it take one clear out of the influence of urban life.

Then the city has playgrounds—all too few, but working admirably for the benefit of the close-set population. It was for the earlier part of my lifetime a wonder as to why so many citizens of Harrisburg had chosen to build on the least possible strip of land on which a match-box house could be erected, when I discovered on my first visit to England that those who settled eastern Pennsylvania came from crowded towns and simply carried along their own ideals. When one goes a hundred miles north of Harrisburg, he gets into the section influenced by the New England development, and the elm-shaded streets and wide lots make communities better to live in. This close-set Harrisburg population makes intimate and close-by playgrounds and parks more vitally necessary.

Harrisburg's parks have been, from the first, administered in the interests of the people. Aside from the one little slip above mentioned, there is no waste of money on elaborate structures. The city's scant park appropriation is spent in promoting true park activities.

It may not be out of point to mention the fact that, broadly formed as this park system was by the guided public spirit of an unpaid civilian commission, the property acquired within the first quarter-million dollars voted by the people is worth now, at prices of abutting land, well on toward six times what it cost, which is not a bad investment for twenty-two years of progress.

An Arrested Parkway Development

The original Manning plan contemplated the connection of all the parks of the city by a parkway eighteen miles in length. Of this, barely half has been completed, and there

seems to be no immediate prospect of completing the rest, largely, it is sorrowful to say, on account of the failure to continue the same ideals. The "ripping out" of the unpaid civilian commission and the placing of the parks, under the Pennsylvania Clark act, in the hands of a single commissioner, elected to do many other things beside look after the parks, has not helped the city's park values. Yet now I believe there has been elected a commissioner who will acquire the same vision which the founders of the park system had, and will convince the people that money enough must be spent to finish the girdle of green, which will be of inestimable value not only to the city's growing population, but in increasing values of contiguous ground thus made available for residence purposes.

If there is any lesson in all this, it is that any city needs in its park work men of ideals and vision. The difficulties usually arise because somebody gets into authority who calls himself a "practical" man, thereby avoiding any adequate forward look or recourse to experience and skill, and simply "getting by" at present cheapness and vast future cost.

EDITORIAL NOTE.—Dr. McFarland speaks with authority regarding the development and needs of the Harrisburg park system, having been a Park Commissioner in Harrisburg for eleven years of the formation of the park system, during which period he did for it all that his rather long experience in park relations the country over made possible.

$300,000,000 Voted for Grade-Crossing Elimination in New York State

ONE of four constitutional amendments approved by the voters of New York State at the November election authorizes the Legislature to issue bonds aggregating three hundred million dollars for the elimination of railroad grade crossings. The amendment provides that the expense of this work shall be borne as at present, 25 per cent by the state, 25 per cent by the city, town or village, and 50 per cent by the railroad companies, and that laws shall be enacted to provide, so far as practicable, for repayment to the state of moneys advanced to railroad companies, cities, towns and villages, at such times, in such manner, and with interest at such rate, that the state shall be able to pay when due, a portion of the state debt equal to the proceeds which shall have been so advanced and interest thereon.

In a bulletin to its members, The City Club of New York, which was one of many civic organizations to endorse the amendment, outlined its purpose as follows:

"The elimination of grade crossings is a serious problem in the state of New York and one that demands immediate attention. One great difficulty in its accomplishment has been the inability of the railroads and municipalities to finance their respective shares of the cost. With the aid of the borrowing power of the state, the necessary funds can be raised at a minimum of interest and without disturbing the credit of either the railroads or the municipalities and without the ultimate expense to the state taxpayer except, of course, for the 25 per cent contribution made by the state. Moreover, the work can be done much more economically if attacked in a comprehensive and scientific way. This cannot be done through an annual unsubstantial appropriation in the budget."

Federal Officers Cannot Replace Village Policemen

EMPHASIZING the fact that Federal officers should not be forced to serve as village policemen in prohibition enforcement, a strong plea for more effective local cooperation was made by Assistant Secretary of the Treasury Andrews at the National Convention of the Anti-Saloon League, in Chicago, November 7. To quote in part:

"The evolution of prohibition from the first laws which made the small communities dry, developing step by step through larger jurisdictions until it became a national law, has assumed, and always must assume, that each community shall police itself so far as local law violations are concerned. The need for having the law cover a wider jurisdiction was always felt because the given community which wished to be dry found itself invaded from without its jurisdiction by liquor importations; and the widening of the scope of the law was intended to prevent these importations. Thus, the national law is intended to prevent the traffic in liquor and make it possible for each community, by policing itself locally, to exist happily without liquor distribution.

"The Federal Government therefore will have done its full part when it eliminates the sources of supply and the traffic in liquor by which it is moved from one community to another. This it can hope to do if its energies may be concentrated upon this task. In order that this may be done, it must be relieved of its present task of local police work. The more that is done in any given state, the better will the prohibition laws be enforced in that state."

Making the Annual Report Effective

MERELY to gather and analyze figures without presenting them effectively is to leave the task half done. Growing appreciation of this fact is evident from the increasing use of graphs in annual reports and other municipal documents. But too little thought is often given to the kind of graph by which data of various kinds can best be visualized.

The circular form of graph is quite common in municipal reports. When the circle has not more than three sectors—as, for example, in showing the division of the tax dollar among city, county, and state—this form of graph is quite effective and easily understood. But the circle is often used also to show the division of the tax dollar for municipal purposes, as in Figure 1, reproduced from a recent city report. In such cases the large number of sectors makes the reading of the titles and a comparison of the percentages a matter of difficulty.

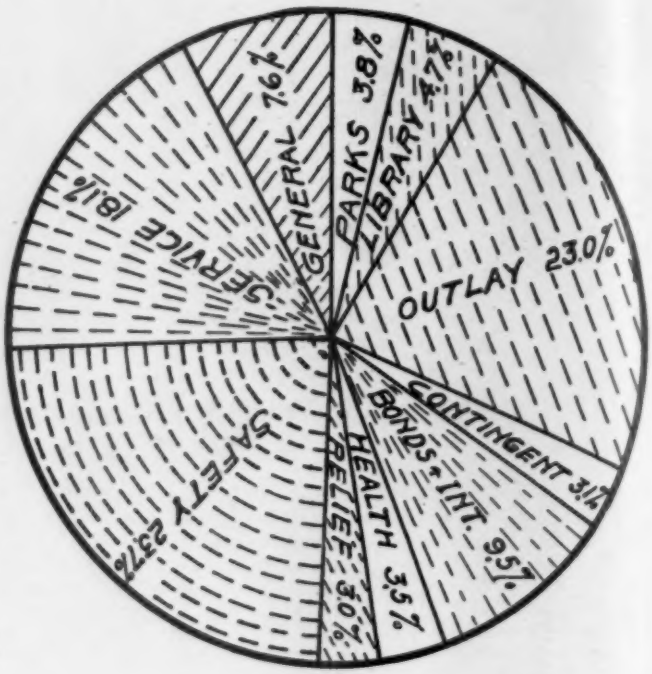


FIGURE 1

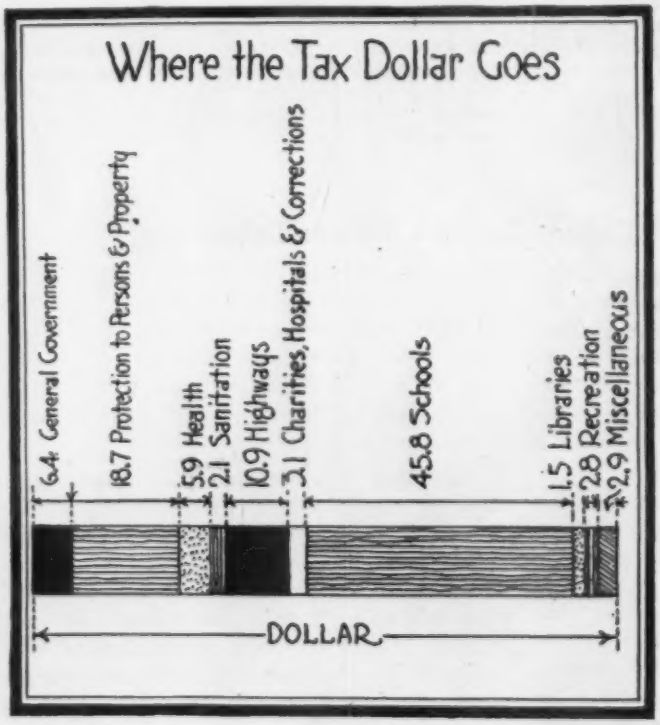


FIGURE 2

In Figures 2, 3, and 4 are shown other kinds of graphs which are more interesting to the reader and permit more accurate comparisons than the circular form.

Figure 2 is a very satisfactory form of chart to bring out the component parts of any group total. The engineering dimension lines above the block in the bar are of great advantage for convenient reading. The figures from which this graph has been prepared by THE AMERICAN CITY are the *percentages* of the total governmental cost payments for operation and maintenance of general departments (other than for public service enterprises) of the average municipality of 30,000 to 50,000 population as shown by the recent report of the Bureau of the Census on

"Financial Statistics of Cities: 1923."

Figure 3 is a good example of what can be done to attract the eye and interest of the reader by the use of symbols, combined with figures and bars plotted to scale for quick comparison of costs. These figures are the average *per capita* costs of governmental services in the same group of cities as shown in Figure 2. The little sketches are adapted from symbols which have already been used in some very effective municipal reports.

Figure 4 is a popular method of presenting costs. The piles of money make an interesting chart, and at the same time are correct in proportion. The figures used are those of the average *total* expenditures for the purposes shown, in the same group of cities for which the percentage and per capita costs are shown in Figures 2 and 3.

THE AMERICAN CITY will be glad to have city officials adapt these forms of charts, in their annual reports or other printed matter, by substituting local figures for those shown. In most cities the newspapers appreciate the news value of municipal statistics, especially if presented in graphic form, and will give liberal space to such graphs in their news columns, if offered to the editor in advance of publication by the municipality.

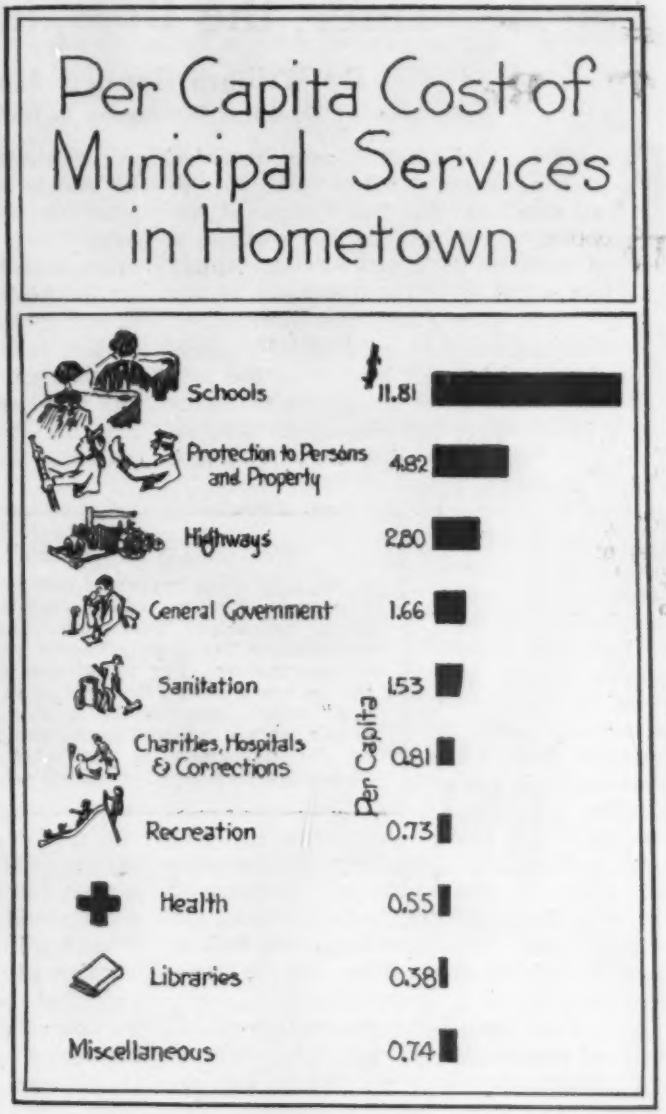


FIGURE 3

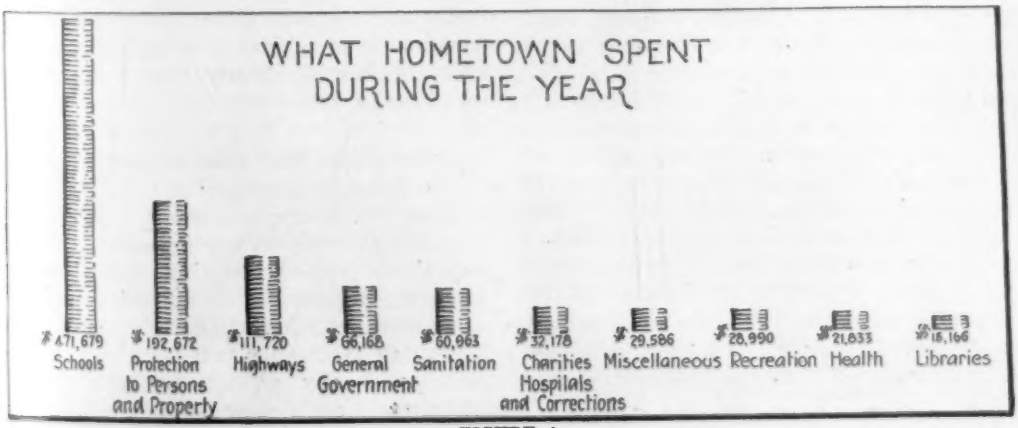


FIGURE 4

The Reformer, the Boss, and the Leader*

By William Bennett Munro
Professor of Municipal Government in Harvard University

ROSCOE CONKLING once remarked that when Dr. Johnson spoke of "patriotism" as the last refuge of the scoundrel he overlooked the vast possibilities that are latent in the word "reform." Conkling was not alone in his abhorrence of this word. It has become obnoxious by reason of its use in many futile campaigns. Nowadays it carries so sinister an implication that men and women who desire changes in the existing order prefer to call themselves "progressives" or "liberals" rather than reformers, and to designate the goal of their efforts as "reconstruction," not reform. This is because the public imagination has come to look upon the reformer as an empirical individual, who periodically shifts his interest from one visionary scheme to another, who promises much and achieves little, and whose ways are the ways of a busybody. There is no small modicum of truth in Brand Whitlock's definition of the reformer as a man or woman who feels a deep and abiding responsibility "for the shortcomings of others."

"Personality in Politics"

is the title of an important new book by Professor Munro, whose two-volume work, "Municipal Government and Administration," is already known to many of our readers. For permission to use the excerpts from "Personality in Politics," which comprise the accompanying article, we are indebted to the author and to the publishers of the book, The Macmillan Company, of New York.

Now when you reflect a moment upon it all men and women are (or ought to be) reformers. Reform is merely a synonym for improvement; and a reformer is any one who desires to make things better. So the only non-reformers are those who believe that we have reached finality in the conditions under which we live. There are few such people anywhere. We are none of us wholly satisfied with the world as it is. Breathes there a man with soul so dead that he can discern no room for improvement in any sphere of human activity? If all reformers were to pass out of existence, we could have no progress, for all progress is by way of reform.

Experience is what gives sobriety to opinion. "Many an ardent and burdensome reformer," said Woodrow Wilson, "would be put to better thinking if he were obliged to express his reform in the exact words of a workable statute" and then compelled to make his statute work. Nothing is easier to make than an unworkable law; and nothing is harder than to execute it. The art of government is largely the art of adapting laws to the foibles of mankind. It is the art of managing large bodies of cantankerous, obstinate, fickle, apathetic, and emotional men and women. Frame the laws as skilfully as you may—and you have taken only the first step. Applying the laws, interpreting them, enforcing them, and developing a popular respect for them—these are also steps that count. And all of them require the cooperation of men drawn from the ranks of the people.

The reformer, as a rule, does not adequately visualize the actual workings of his proposal. When he clamors for an official censorship of motion pictures he envisages a board of high-minded, intelligent, and incorruptible citizens passing without fear or favor upon every film. But it is quite as likely that the administration of his censorship law would presently find its way into the hands of a trio who owe their selection to political influence and whose incorruptibility is more than open to suspicion. Most of our failures in the realm of government are due to lapses in the human equation. There are some communities which are able to secure good government under any system; there are others which seem unable to achieve it no matter how radically or how frequently their political institutions are reformed.

That Reformers May Make a Better Showing

In order that reformers may make a better showing in the way of concrete achievement, three things would seem to be essential. First, they should aim at something less than the immediate regeneration of mankind and the spontaneous transformation of human nature. It is a fair assumption that humanity will remain, under any political or social order, pretty much as it now is—a composite in

* Copyright, 1924, by The Macmillan Company.

which there are many good, many bad, and many indifferent traits. Taking this into account, we cannot hope for betterment save by gradual stages.

Another desideratum is the bringing of reforms into some relation with one another. It is not enough that various proposed reforms shall have merit, if they are inconsistent among themselves and will not harmonize. In that case the energy spent upon each merely offsets what is expended upon another. It is not uncommon, for example, to find an organization urging both the short ballot and direct legislation with no appreciation of the fact that these two things are fundamentally at variance. The ballot cannot be shortened by putting more things on it. If you merely remove names and substitute questions you are no better off. You are worse off, in fact, because it takes a greater measure of discrimination, on the voter's part, to vote wisely on measures than on men. So it is with various schemes of public improvement and social amelioration. Civic leagues and chambers of commerce often pledge their support to expensive projects of street widening and park construction; in the next breath they insist that the tax rate be kept down. Housing reformers call for better construction, for modern sanitary arrangements, and for laws against overcrowding, while social workers bemoan the rising scale of rents and protest against the burden that is being thus placed upon the poor. Each group of reformers is quick to see the mote that is in another's eye and not so quick to discern the beam that is in its own. It will not be an easy task to range the forces of reform behind a common program, but we cannot say that the task is impossible, because it has never yet been seriously tried.

Reform Movements Are Judged by the Company They Keep

Finally, there is the need for more attention to the psychology of furthering a good cause. People are no more readily influenced by the merits of a cause than by the men who are behind it and by the methods used in promoting it. Their suspicions of self-interest are easily aroused. They have learned that professions of altruism on the part of reformers are not always to be taken at their face value. Not infrequently it turns out that the ostensible proponents of some plausible project are men of straw whom the captains of industry, or the real estate interests, or the street railway crowd have pushed to the front. Or the reform movement repels fair-minded men and women by placing in the limelight, as its leaders, men who are known to be illiberal in their views on other questions and narrow in their social sympathies. Anomalous though it is, you will sometimes find among the officers of a reform organization men and women who still live in the stagnant nineties, bric-a-brac from the Victorian age. Or, in still other instances, the reform movement repels by reason of the ultra-radicals who are behind it. People then distrust the proposal because they mistrust the leaders. What many radicals really want is not democracy, but "protocracy," government by "forward-looking men," to-wit, government by themselves. In any event, reform movements are judged by the company they keep, and the public mind has grown suspicious. It wants to know not only whether the voice is the voice of Jacob but whether the hand is his also. To use a mercantile metaphor, reform organizations have paid too little attention to the dressing of their front windows. In this they can learn something from the methods of the boss.

Now all this must not be taken to imply that the history of reform in American cities has been for the most part a chronicle of failure. The work of the reformers has been attended by a considerable degree of success. There is a common impression that all reformers are quitters, that they will not stay in the game to the end. "These reform movements," an East Side gangster once said, "are like queen hornets. They sting you once, and then they die." But there is no real basis for this impression. Reformers are nothing if not persistent. By sheer persistence they have overcome, in many fields of effort, the handicaps imposed by their personnel and methods. Reformers may have lacked sophistication; but they have not been deficient in courage or perseverance. Thrown back, they have returned to the fray. Take the single-taxers, for instance. In forty years they have hardly won a single skirmish, but they are still on the firing line and the morale of their little army is as good as ever. The civil service reformers have been conducting what military men would call "a war of positions" for half a century and they are still at it. The eighteenth and nineteenth amendments demonstrate what organization and perseverance can do. In every field of reform there has been progress, a little in one place and a great deal more in another. We must not look for finality or complain because the reformer is with us always. It is the reformer who keeps the world headed upward. He is the salt of the earth.

What Is the Cure for Bossism?

"The boss in politics," said Roosevelt, "is just like any other kind of boss." His business is to get the job done, and he adapts his means to that end. We are accustomed to think of rings and bosses as American inventions, but this is far from being the case. The names are of American origin, but the institutions are as old as the science of politics. We know that there were political bosses in ancient Athens, and a recent writer has told us something about bosses in republican Rome. What the Romans called a "triumvirate" we would call a "ring" nowadays. Caesar, Crassus, and Pompey were not widely different in their ideals and methods from Tweed, Connolly, and Sweeney.

Now what is the cure for bossism? It cannot be a simple one or we would have found it long ago. Whatever it is, it must strike at the sources of the boss's power and not at the mere exercise of it. This power arises, in the main, from three things: The first is our complicated political machinery, which allows authority to be concentrated and responsibility to be diffused. The need, therefore, is to simplify the frame of government, especially in the cities. Much has already been done along this line. Before a government can really belong to the voters it must be made intelligible to them. And most people prefer an intelligible government if you let them have it. That is why the newer forms of city government, the commission and city manager plans, have been so widely popular. There never was any magic in the commission plan except that people understand a government of five men more easily than a government of fifty. The cities of America have made greater progress in simplifying their governments during the past twenty years than they were able to make during the preceding fifty.

Bossism does not thrive where government is simple and responsibility direct. It thrives best in a political jungle, and the boss will keep the jungle of city government uncleared as long as he can. It is not without significance that every attempt to simplify the complicated government of New York City during the past fifty years has been bitterly opposed by Tammany Hall. Three years ago the New York Legislature passed an act providing for the appointment of a commission to revise and simplify the New York City charter. Every Tammany member of the Legislature was recorded in opposition to the passage of that act. The city manager plan has encountered the opposition of bosses everywhere. As a plan of local government it is far too simple for their liking.

The second source of the boss's power is the patronage, both public and private, which he is able to control. The spoils system first brought the boss into being, and it is the spoils system that has contributed more than anything else to keep him in power. Without spoils the morale of the machine cannot be kept from disintegrating. But there are signs that the spoils are becoming scarcer. Political beachcombers in all our great cities are grumbling loudly that things are not what they used to be—that civil service rules, publicity, the requirement of competition in contracts, have combined to take away what they call "honest graft." The loaves and fishes are no longer available by the basketful. The boss now finds it necessary to dole them out to his followers in small slices. Patronage of the unofficial sort still remains in fair supply, but it also shows signs of dwindling. If we could get rid of patronage in all its forms, we should soon see a high mortality-rate among bosses. "You take my life," says Shylock, "when you do take the means whereby I live."

"Tame the Boss and Make Him Drag Your Chariot"

Finally, it is essential that we make a distinction between the ideals of the boss and his methods. Professor Hart made that distinction some years ago when he advised reformers to tame the boss and make him drag their chariot for them. The ideals of the boss are not for honest men, but some of his methods could be copied to advantage. His ethics aside, he is by all odds the most "efficient" figure that the American municipal system has produced. He is the incarnation of 100 per cent efficiency in getting what he goes after. In his own crude way he has been performing a social service that, but for him, would not have been performed at all. He has been serving as the mediator between poverty and power, between the people of the slums and those who would fain be their oppressors. He is the protector of his people against profiteering landlords, avaricious employers, crooked policemen, iron-fisted magistrates, shyster lawyers, and other predatory amphibians. He is the friend of the forgotten man, the man whom society forgets.

At a municipal employment office you will see jobless men standing in line by the hour. But there is no queue outside the boss's door. The city council, with a fanfare of trumpets, passes an ordinance establishing a municipal

employment bureau, and places a worthy politician in charge of it, preferably one whose chief qualification is that he has not been able to get any other job for himself. He opens an office, sets a stack of application blanks on the counter, tells the men to fill them out, inserts an advertisement in the newspapers, and waits for something to happen. The boss has none of this paraphernalia; he doesn't need it, for he knows where the jobs are and the telephone does the rest. Small wonder it is that he profits in prestige from this sort of competition. It is only by broadening the scope and improving the methods of our social welfare policy that we can keep people from taking as a favor what they are entitled to have as a right.

Democracy must have leaders. The problem is not to abolish bosses and bossism but to replace them with leaders and leadership.

The difference between leaders and bosses is not a matter of methods alone. It is a matter of ideals as well. It is also, and this is important, a matter of status. The leader in politics occupies a position that is recognized by the rules and customs of the party organization, and sometimes by the laws of the land. He is chosen in a prescribed way and is vested with certain definite responsibilities. But the boss creates his own position; he alone determines its powers, its duties, and its obligations. Leaders are essential in a democracy, and no scheme of popular government has ever managed to succeed without them. But bosses are not essential; on the contrary, it can be demonstrated from the political history of the United States that popular government has achieved its best results in those states and communities where bossism is virtually unkown.

"With Words We Govern Men"

Although we of the New World delight to call ourselves a practical people, we have been firmly enchained to formulas. "Few ideas are correct ones," said the cynical old politician in one of Disraeli's novels, "but with words we govern men." That aphorism, without much doubt, is more nearly true of the United States than of any other country. The beacon lights of American politics are a series of formulas and slogans. Government rests on the consent of the governed, democracy means the rule of the people, the executive and legislative branches of government must be kept separate, we must have a government of laws, not of men, and so on. These shibboleths have all the sanctity of gospel in the American mind. They have become part of the natural beauties of the land, like the Grand Canyon or Niagara Falls. Nevertheless, it does not require much argument to convince any reflective mind that these credal phrases, although all of them embody a modicum of truth, have become the cloak for a great deal that is grotesquely absurd.

Take the stock definition of democracy, for example. The assertion that democracy is the Rule of the Many far antedates the discovery of the New World. It is one of the oldest among the platitudes of politics. Monarchy is the Rule of One, obligarchy the Rule of the Few, and democracy the Rule of the Many—so ran the classification twenty-five hundred years ago. But, despite its great age and remarkable tenacity, nothing in the whole range of political terminology has had a scantier historical verification than this. The world has never had, at any stage, but one form of government. This, as Lord Bryce once pointed out, has been the Rule of the Few.

Monarchy is the rule of those few advisers who surround the monarch and exercise powers in his name; oligarchy is the rule of the few who exercise the power in their own name; democracy is the rule of the few who exercise it in the name of the people. It is in the very nature of government that power shall be exercised by the few. There is too much of it for any one man to wield unshared, even if he were minded to do so; on the other hand, there would be chaos if the actual exercise of power were parceled into an indefinite number of hands. The basic problem of government, therefore, is not whether to put the one, the few, or the many at the head of it, but how the few who must inevitably be at the head shall be chosen, controlled, and made accountable. All the practical problems of government head themselves up into this one,

The Opinion of the Many Is Made by the Few

Public opinion, the opinion of the Many, is what the Few have made it. If public opinino insists upon one course of policy rather than another, it is because the Few in one political camp have been more successful in marketing their leadership than the Few in the other camp.

I have said that authoritative political leadership is an essential of sound democracy. There can be no question about it. Issues do not propound themselves. Programs of public policy do not formulate themselves. Campaign funds do not drop from the clouds. A consensus of opinion among multitudes on any matter is not spontaneous but has to be

wrought by the sweat of somebody's brow, Leaders, of one sort or another, must direct the process. And this, as Walter Lippman has pointed out, is not because the minds of those who make up the multitude are inferior to those which perform the functions of leadership; "It is because thought is the function of an organism, and a mass is not an organism." Thus it is that a leader may have a following which averages higher in mentality than himself. It is not brains alone that make a leader of men; it is rather the ability to discern and to vocalize the aspirations of those who are ready to be led.

Political leadership carries a great responsibility. Its essence, indeed, is responsibility, rather than influence, prestige, or power. To lead is to teach, and the leader occupies a pulpit from which he directs, for good or ill, the opinions and attitude of many thousands. He can raise the whole tone of public thought. He can build up a great following that makes his ideals its own. Gladstone did this in England; both Roosevelt and Wilson did it by different methods in America. Or he can merely try to put himself on the same level as his people, to keep his hand on the public pulse, his ear to the ground, and may shape his own convictions accordingly. Speaker Cannon once said that President McKinley kept his ear so close to the ground that it got full of grasshoppers. . . . Independence in a leader is a virtue, but is must be qualified by a sense of responsibility, otherwise it is not leadership but dictation. Deference to the public will is a virtue, but it must be vitalized by independence of thought and action. The successful leader must appeal to the reason of his people without forgetting that they have emotions; and when he appeals to their emotions he must not lose sight of the fact that reason, even in a democracy, is what gives stability to opinion. A democracy is tested by the mettle of its leaders, and its success or failure must fundamentally depend upon the discernment with which it makes its choice.

Street-Widening and Building-Line Procedure in England

AMONG the many important provisions of the British Public Health Act of 1925*—"public health" having a much broader interpretation than is customary in America—are those relating to street widening. The following outline of these provisions is based on a summary of the act issued in pamphlet form, September 4, 1925, under the direction of the Minister of Health.

Section 33 and 34 of the act enable local authorities to prescribe an improvement line (i.e., the line to which the street or main road is sooner or later to be widened) where in their opinion the street or main road is narrow or inconvenient, or without any sufficiently regular boundary line, or where it is necessary or desirable that it should be widened. The improvement line may be prescribed in relation to either side of the street or main road, or at or within a distance of 15 yards from any street corner.

An "improvement line" as defined in the act, is distinct from a "building line" (the line beyond which buildings in a street are not allowed to project). The improvement line is designed to prevent the erection of buildings on land which ultimately will be required for street widening. Power to prescribe building lines is given in the Roads Improvement Act, 1925. Building lines may be prescribed for a public highway, whether it is proposed to widen the highway or not; for example, for the purpose of amenity in the arrangement of the buildings fronting the highway or for securing visibility for traffic purposes. They will naturally often be fixed behind improvement lines, though the two lines will frequently be the same, especially in central business quarters.

Any improvement line proposed to be prescribed under the new Public Health Act, must be marked on an improvement plan, which is to be deposited for the inspection of persons interested and notice given of the deposit of the plan. After consideration of objections to the proposed improvement line, the line may be prescribed by the local authority or county council, but an interval of not less than six weeks must be allowed to elapse between notice of the deposit of the plan and the prescription of the line.

After the improvement line has been prescribed, no new building, erection, or excavation is to be placed or made nearer to the center line of the street or main road than the improvement line, except with the consent of the local authority or county council.

Any person whose property is injuriously affected by the prescribing of an improvement line is to be entitled to compensation, but compensation is not to be paid on account of any building erected, or contract made, or other thing done after the deposit of the improvement plan, unless it is for the purpose of finishing a building begun or of carrying out a contract entered into before that date. The amount of compensation, in default of agreement, is to be determined by arbitration.

Power to purchase compulsorily any land not occupied by buildings, which lies between the improvement line and the boundary of the street, is given. Any benefits accruing to any person to whom compensation for injurious affection, or in respect of the purchase of land, may be payable, by reason of the widening or improvement of the street, are to be fairly estimated and set off against the compensation.

* The act, which became effective September 8, 1925, extends to England outside of London, and to Wales. The wide scope of the act is indicated by the fact that, in addition to secetions relating to sanitation, infectious diseases and hospitals, its provisions include such subjects as the naming of streets, the location of fire alarms, increased powers as to public parks and pleasure grounds —and even the providing of parking spaces for vehicles.

The Boulevard Lighting System of Kalamazoo

The Use of Two-Way Asymmetrical Refractors on Center Parkway Makes Interesting Problem

By Earl E. Norman
Superintendent, Department of Public Utilities, Kalamazoo, Mich.

WHEN boulevard lights were proposed in a certain residential section of Kalamazoo, several problems arose. The type of boulevard lights in use in the business section of the city was hardly appropriate for use in a residential section. Yet it was thought undesirable to provide another system of boulevard or ornamental lights which would equipped with the glass ware used in the busi- that already in use. To use a boulevard pole equipped with the glassware used in the business district would make an altogether too large and massive affair.

The city's overhead lighting system already consisted of a complete installation of asymmetrical refractors of the two-way, four-way, and highway types. These were installed in February, 1924, and have proved so successful that it was thought desirable to use the same refractors on a boulevard lighting pole if one could be designed which would have the necessary artistic lines and still use the perfectly utilitarian asymmetrical refractor. This would permit of the use of the same glassware that was already in use on the overhead lighting system and thus avoid carrying a special stock of supplies.

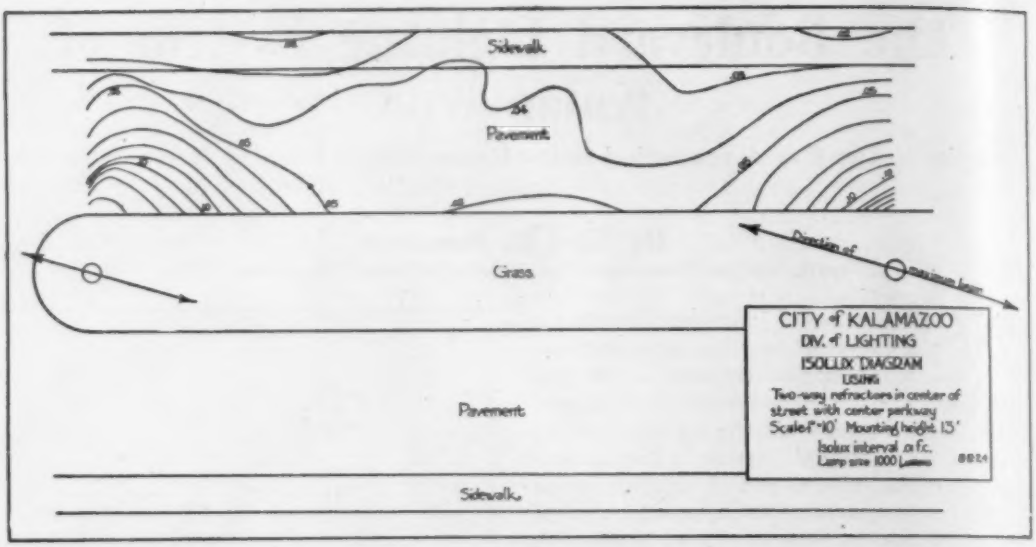
After considerable negotiation with electrical manufacturers, a fixture for boulevard lighting purposes was developed which can be used with any of the asymmetrical or symmetrical 8-inch refractors. These fixtures, complete with the pole, are shown in the accompanying illustration.

In this particular installation, the fixtures were to be mounted in a parkway in the center of the street. The use of a proper asymmetrical refractor so located was quite a problem. A two-way refractor would throw the greater part of the light onto the grass parkway. A highway refractor would illuminate one side of the road only. After considerable experimentation, it was finally decided to use a two-way refractor, but instead of adjusting it to throw the maximum beam of light parallel with the street, it was determined to throw the maximum beam at an angle of about fifteen degrees with the center of the street, so that

TYPICAL VIEW OF BOULEVARD LIGHTS IN KALAMAZOO

an autoist in driving down the street would have the maximum light thrown from over his left shoulder. The lights which he faces while driving down the street illuminate the opposite side of the street. This gives the effect, to the autoist, of driving against a very dim, nonglaring light, yet the pavement is lighted very efficiently.

The use of a two-way refractor on this installation has made it possible to use a very small lamp. Where with any symmetrical system of light distribution, a 2,500-lumen lamp would be necessary, a 1,000-lumen lamp on this particular installation has been found ample, and, in fact, in places of as high or higher intensity on the pavement than a 2,500-lumen lamp under the usual conditions. When the beams of the two-way refractor are placed at an angle of about fifteen degrees with the



street, the successive beams from the successive lamps overlap each other so as to give a very even illumination on the street surface. It is ordinarily considered that street illumination is satisfactorily uniform if the brightest spot is not more than four times as bright as the darkest spot. On this particular installation, we have succeeded in obtaining a light distribution of a ratio of 1-3/10 to 1 instead of the usual 4 to 1. An Isolux diagram of this illumination is shown above.

The lamps and sockets are standard series equipments. They are grouped in circuits so that not more than 600 volts is across any one circuit; each circuit being operated by a 1:1 ratio series transformer. The primary circuit is overhead and is the same circuit that feeds overhead street lighting. The secondary circuit leading to the ornamental poles is wired in lead-covered duplex laid directly in the earth of the grass parkway but up against the curb, to get any protection that the cement curb might afford. Where the cable passes under pavement, it is drawn into standard iron conduit which was laid in the concrete foundation of the pavement.

CHILDS DOUBLE-TANK COMBINATION CHEMICAL AND HOSE CAR EQUIPMENT MOUNTED ON GRAHAM 1½-TON CHASSIS, IN SERVICE IN RICHFORD, VT.

We are indebted to C. H. Hurlbut, Fire Chief and Deputy Sheriff, Richford, Vt., for this photograph.

The Municipal Water Treatment Plant at Newark, Ohio

Unique Baffling, Dorr Clarifier, and Carbonation Chamber Solve Problems of Treatment

By C. T. Kaiser

Chemist-in-Charge, Newark Water Softening and Purification Works

THE Licking River, from which Newark takes its water-supply, has, above the intake, a watershed area of about 250 square miles, with three small towns situated in this territory. The stream flow has been found sufficient at all times, so that no impounding reservoir has ever been constructed, a low dam just below the plant serving to submerge the intake. The topography of the surrounding country is rolling, the soil very loose and gravelly, and the resulting quick run-off, coupled with the fact that there is no impounding, produces a very flashy and shifty stream.

NEWARK, OHIO, WATER-WORKS
Front left.—Filter house, behind which is seen the chemical building. At right.—The pumping-station

The original works consisted of an infiltration system laid in the bed of the river opposite the plant, a direct intake for the low-service pumps, a small suction reservoir for the high-service pumps, and a high-elevation storage reservoir which supplies the city by gravity. The new work includes a concrete intake with screens and gravity conduit to the new low-service pump-house, new electric low-lift pumps, a 6-million-gallon water-softening and purification plant, and a new 8-million-gallon high-service pump. The infiltration system and high-elevation storage and one old high-service pump were retained. Charles P. Hoover, consulting engineer, of Columbus, Ohio, designed the plant.

Description of New Work

The low-lift pump-house contains three electrically driven pumps of the centrifugal type of 2-, 4- and 6-million gallon daily capacity. The water pumped into the plant is regulated by throttling the pump discharges.

The chemical house and filter house are in one superstructure, located adjacent to the high-service pumping-station. Within the chemical house are lime storage bins holding two cars, lime unloading and handling equipment, scales, slackers, and solution tanks. Additional storage space is provided for three cars of soda ash and alum in bags. The lime is unloaded by means of a power shovel and elevated into the bins with a bucket elevator and screw conveyor. Two Booth lime feeders measure the milk of lime into the water. Alum is applied by two dry feeders fur-

THE DORR CLARIFIER OR SLUDGE REMOVAL UNIT IN OPERATION, SHOWING THE MIXING TANKS AT THE LEFT AND BASINS IN THE REAR

nished by the International Filter Company. Also located in the chemical house are the 24-inch Venturi which measures the raw water, the sutro weir box, and the preliminary mixing tank or saturator with mechanical agitation. The sutro weir box is supplied with six weirs, and by means of these almost any division of the flow is possible. At present one-third of the flow is diverted through the mixing tank just mentioned, receiving all the chemical application, and is retained for about twenty minutes. This over-treated portion then combines with the remaining two-thirds of the raw water and passes to the gravity mixing tanks. This arrangement of chemical treatment is called "split treatment."

The gravity mixing chamber is located adjacent to the settling basins and is so arranged that the water can pass through continuously as in series flow or in a parallel manner, the water entering at two points through branch lines, or, if desired, either half of the chamber may be used alone. The tank is covered and provided with suitable manholes and inlets. The baffle system is a combination of the over-and-under and around-the-end types, there being 166 baffles, some of wood and some of concrete. At nominal capacity the tank affords a one-hour retention period and a velocity of 5 feet per second.

Dorr Clarifier

The Dorr clarifier, located between the mixing tanks and settling basins, is a circular concrete tank 40 feet in diameter and about 8 feet deep, with a conical bottom sloping toward the center. The flow through this tank is radial, the softened water laden with floc from the mixing tanks entering at the top and center, and the clear water overflowing around the circumference. It is designed for a retention period of 22 minutes at nominal capacity. The Dorr mechanism consists of a slowly revolving rake which lies very close to the bottom of the tank and moves the settled solids slowly toward the center. These plows revolve four times per hour and are driven by a 3-horse-power motor with suitable speed reducers. The sludge is drawn off continuously underneath by means of a 6-inch line connecting with the center of the tank. Sludge discharge is regulated by throttling a 6-inch valve on this line. The inlet and outlet lines to the clarifier are provided with valves so that the clarifier may be by-passed if desired.

There are two separate settling basins, with center baffle, of one million gallons capacity each, which give an eight-hour retention period at plant capacity. The velocity at 6 m.g.d. is about ½-foot per minute. They are arranged for series or parallel flow or may be operated singly.

Carbonation Equipment

As the plant neared completion, it was necessary to sacrifice some small refinements in order to cut down the total cost, and it was found impossible to construct a separate carbonation chamber. Accordingly, the diffusers were laid on the return or outlet side of the basins. Flue gas from the boilers was drawn through a scrubber and drier by a steam-driven compressor and then forced through the diffusers into the water at the outlet of the basins. These diffusers were constructed of a very lean mixture of coarse sand and cement cast around a perforated pipe.

There are four filters of 1½ million gallons capacity of conventional design with cement troughs. They are fitted with Simplex tables, gages, and controllers. A 50,000-gallon elevated steel wash-water tank supplies water for about 1½ washes at a 24-inch vertical rise per minute. The pipe gallery is interesting in that it is especially accessible. A small clear well of 225,000 gallons capacity, in two compartments, lies under the filters and empties into the suction well for the high-service pumps through two 20-inch conduits.

Disinfection is taken care of with a Wallace & Tiernan vacuum-type chlorinator discharging into the high-service suction well.

Night Operation

The pumping-station is also the municipal light plant, and a part of the current generated for the street lights is used in the plant. As the light plant operates only at night and operates more economically under a heavy load, it has been the practice to run the softening plant at night also, and this has introduced minor difficulties, such as adjustment of chemical feeds daily, settling of the sludge in the mixing tanks, and settling of the lime solutions. The daily periods of operation vary between 12 and 20 hours, the plant starting up in the afternoon and shutting down early the next morning.

The plant was first started up in March, 1924. The weather was very bad, with considerable rain and snow and frequent floods and high turbidities. The current is very swift around the intake during these floods and on two or three occasions threatened to undermine the intake and gravity conduit. To prevent this a break was constructed of brush about 500 feet above the intake, which it is hoped will straighten the channel somewhat.

In addition to this, a protecting embankment of heavy concrete has been built up- and down-stream from the intake. For these first few months it was the practice to alternate between the 2- and 4-million gallon pumps to obtain a daily average of about 3 million gallons. This required very careful adjustment of the chemical feeds, and it was soon found that best results could be obtained by throttling the 4 million gallons down to the required daily amounts. This arrangement is being used at this time and very steady chemical treatment is obtained. The caisson system is not connected up yet with the new low lifts, but when completed will make it possible to escape the high turbidities in time of floods. Since the plant is operating intermittently, it is possible to shut down for short periods in order to allow these short flashes of mud to go by.

The average hardness of the raw water is about 275 p.p.m., and this is being reduced to an average hardness of 85 p.p.m. in the filtered water. During the summer and fall months the river water has been exceedingly clear, with no apparent turbidity or organic material, and yet after a hard rain it is possible for it to change in two or three hours to a turbidity of 2,000 p.p.m., or more, and to a hardness of possibly 80. These turbidities are usually of short duration, however, unless the rains are over prolonged periods. The chemical treatment requires about 9 grains of lime, 1.5 grains of soda ash, and 1 grain of alum. As long as the incrustment hardness is below 40 p.p.m., soda ash is dispensed with and lime used alone.

LIME ROOM OF THE NEWARK, OHIO, WATER-WORKS, SHOWING THE LIME BINS, SCALES AND SLACKERS, AS WELL AS THE BOOTH FEEDERS

Milk of lime is elevated by means of small centrifugal pumps

Chemical Feed Regulators

"Pebble" quicklime is being used at the present time and is stored in air-tight bins above the solution tanks. It is weighed by hand into the slackers, from which the milk of lime flows into the solution tanks below the slackers. The slackers are stirred by electrically driven rakes and are fitted with water and steam lines. The large solution tanks are agitated by Albright-Nell "perfect circulators." These are double propellor type stirrers with both propellors lifting, the propellors being fitted to concentric shafts. Soda ash, when used, is added to, and fed along with, the milk of lime solution. Alum is fed in granulated form through the two dry feeds. These consist essentially of a revolving hopper and a deflector knife. The hopper is rotated an arc of a circle five times a minute, the alum falling into a whirling spray of water which carries it to the reaction tanks. The arc is varied by the automatic proportional feed connected to a float in the weir box. The deflector knife may be adjusted over a wide range of settings by hand. Some trouble was experienced with the agitators in the lime tanks after a few weeks' operation, the lime creeping up between the two shafts and causing them to bind frequently. After repeated attempts to prevent this, one of the drive motors burned out and it was thought best to use one propellor only. Samples of the solution taken over a run of the tanks, stirred with one propellor only, show that very good agitation is still obtained. The lime saturator or preliminary mixing tank is stirred by the same type of mechanism, which has been arranged in like manner.

Problems in Mixing Tanks

As a result of the intermittent operation, it was observed that a number of the channels in the mixing tanks did not have the proper velocity, and on investigation some were found to be very badly sludged up. They were at first operated in parallel, and as the pumping averaged 3 million gallons, the velocity was rather low, so that conditions favored partial settling in the tanks. In a short time it was found that a great part of the water was finding its way through a series of flap-gates provided as a safety measure in each channel wall, instead of traversing the entire distance through the tank. This served to by-pass the mixing tanks, and rather poor reac-

tions resulted, as the water was not retained for the proper interval. On emptying the tanks, we found débris of different kinds, and in it several sacks of sand and gravel, an overcoat, and two ladders. After cleaning and before refilling the tanks, all the flap-gates were fastened tightly shut, and only one tank was put into service. As a result, a very satisfactory velocity is obtained in every channel and there is no evidence of settling, the interior being scoured clean.

Sludge Removal with Dorr Clarifier

Some difficulty was experienced in getting the sludge to carry away from the Dorr clarifier the first few days, and after examining the sludge line, a piece of wood was found obstructing the entrance to the drain. On removing this, we had trouble throttling down the discharge enough. The round feed well had a tendency to produce excessive inlet velocities and short circuits, and to break these up a baffle of 2-inch iron strips spaced about 2 inches apart was hung in the feed well opposite the inlet pipe. This apparently has been very effective, as there is now no evidence of short-circuiting. The velocity and retention at three million gallons or even 4 million gallons appears to be satisfactory, but when the pumping exceeds 4 million gallons considerable floc is carried over the outlet weir. To regulate more carefully the sludge discharge, a decant pipe has been arranged so carefully that a sludge containing as high as 15 per cent solids has been produced and discharged by gravity. The amount of water wasted along with the sludge has not as yet been accurately measured, but is estimated at about 10,000 gallons daily. The highest solid content obtained by throttling the 6-inch valve was around 4 or 5 per cent, but the decant has made it possible to maintain an average of about 12 per cent, It is recommended for best results that a blanket of sludge about one foot deep be maintained over the rakes to effect the maximum concentration and prevent any stirring action. Daily observations may be made at the time when the plant is not in operation, as the water is very clear and every detail of the tank easily seen during the day. Repeated tests made on the influent and effluent water show that an average removal of suspended solids of 98.5 per cent is obtained. To maintain this figure, however, it is necessary to keep a close check on the chemical treatment and carry at least 5 p.p.m., caustic alkalinity.

As a result of the performance of the clarifier, it would seem that the basins are possibly somewhat larger than necessary. After four months' operation only about 2 feet of sludge was found on the inlet side of the baffle, and a few inches on the outlet side. There were intervals, too, during these first months, when the clarifier was not operating. It is certain, however, that it will be necessary to wash them no oftener than once a year. The basins were operated in parallel at first, and carbonation took place in both of the outlet compartments. The upward rise of the gas produced a boiling effect at the surface which set up currents reaching half the length of the basin, and it was found that almost the entire basin was carbonated. This had the effect of cutting down the period of contact for proper sterilization with the lime, and finally the basins were changed to series operation and carbonation was practiced in the outlet of the last basin.

Soot Troubles in Carbonation

After only a few days' operation, the flow of gas from the diffusers seemed to diminish, although there was more than sufficient pressure in the lines, and the second week it was concluded that the diffusers were becoming clogged with soot. At the first opportunity the basins were drained and the cement diffusers broken away from the pipes. The interiors were found to be packed solidly with soot and tarry matter. Thereafter the gas was allowed to flow from the perforations in the pipes, and no difficulty was encountered in fully carbonating the water. The trouble did, however, crop up at this time in the boiler room. The boilers are hand-fired with soft coal, and consequently the flue gas carries considerable amounts of soot. This would not cause any material damage in the process if it would pass readily through the lines to the basins, but such is not the case, for the soot congeals out on the oily interior of the compressor and produces a knock. It became necessary to clean the compressor almost every day, and finally it was possible to run only a few hours before it became clogged. To bring about a better scrubbing, the coke was removed from the scrubber and broken down to ½-inch size and the water sprays were increased, but without apparent improvement. Then a light oil, such as is used in refrigeration machines, was used in the compressor, and this gave slightly longer runs. Next, the drying tower, which was filled with excelsior, was packed with alternate layers of burlap and excelsior. This proved a very good filter, the hairy fibres of the burlap serving to catch and hold the soot particles. This filter held for about two weeks and then broke. Just

at this time, too, a very disagreeable taste was noticeable throughout the distribution system, and was easily identified as phenols.

In hand-fired boilers there takes place more or less distillation of the coal, and phenols are produced in small quantities where this occurs. Slight tastes and odors had been reported here and there about the city, and were occasionally noticed in the laboratory, but they existed over only short periods and could not be definitely identified. Immediately after the vacuum-type chlorinator was set up and in use, the tastes became very pronounced, phenols being greatly exaggerated by chlorination. For the time being, carbonation with boiler flue gas has been given up.

Carbon Dioxide Generated in Coke Furnace

It was then planned to construct a coke furnace to generate the carbon dioxide, and fortunately a used household furnace with fire-brick lining was obtained at small cost and is proving very satisfactory. The grate area is 14 by 40 inches, and about 100 pounds of coke is required per million gallons. The process is controlled by hourly tests of the phenolphthalein alkalinity, and it is aimed to carry about 1 part per million of CO_2 in the applied water. Regulation of the concentration of the gas going to the diffusers is accomplished by air cocks, stoking or dampers, or by varying the speed of the compressor. Samples of the gas taken at the compressor show an average of 5 per cent CO_2, while that emerging from the carbonation chamber (bubbles) shows only 0.5 per cent, or in other words, 90 per cent of the available carbon dioxide is used up. If the free CO_2 in the applied water is present in amounts exceeding 2 p.p.m., there is a rise in the total alkalinity of the filtered water, due, no doubt, to the fact that some solution of the mat on the filters occurs.

Sand samples from the filters after six months' operation showed that no change had taken place in the filtering material since the original installation. The sand has an effective size of 0.35 mm. and a uniformity coefficient of 1.20. No incrustation is noticeable, although the carbonator has not operated continuously. After one year's operation there is no apparent change in the sand, with no mud balls or evidence of caking.

Filter runs are from 40 to 60 hours in length and the loss of head is very low. Length of run is determined not by the loss of head but rather by the appearance of the filters, the mat usually breaking after 40 or more hours' service.

Results with New Chlorinator

During the first few months' operation an old type chlorinator discharging into a dead end of the suction line was in use, and, being worn out, necessarily gave very irregular treatment, with heavy slugs at times. This accounted for the presence of disagreeable tastes only at intervals. When the new chlorinator was installed, discharging into the suction well, a very even treatment was obtained, and it was found that very light doses were necessary to prevent tastes from chlorine, due possibility to the very low organic content.

It has been suggested that settling basins and filters might well be dispensed with, as a result of the performance of the Dorr clarifier as applied to water treatment. There is no doubt that the size of the settling basins may be greatly reduced, or it is possible that they could be entirely eliminated from the design of future plants, but it would appear that filters are practically a necessity. When washing a filter it is surprising to observe the quantity of floc caught during a filter run, when the extreme clarity of the applied water is considered. This fact also shows that no great solution of suspended material or floc takes place in the carbonator. The advantages of the Dorr clarifier in the treatment of water are (1) continuous discharge of the settled sludge, especially advantageous in the case of plants taking their supply from small streams, as at Newark, (2) use of entire capacity of basins for settling out of sludge instead of storage reservoirs for sludge, (3) possible reduction in size of settling basins and consequent reduction in first cost of plant, and (4) by using a pump to lift the sludge, outlet may be placed at an elevation below that of the sewer drain.

OPERATING RESULTS

AVERAGE OF 10 SETS OF SAMPLES TAKEN FROM THE DORR CLARIFIER OVER A PERIOD OF THREE WEEKS

	Parts per Million	
	Influent	Effluent
Suspended material	586	6
Total alkalinity	42	40
Basicity mono carb. alk.	32	32
Caustic alkalinity	10	8

The above results represent normal conditions when the turbidity of the raw water is very low. The effluent remains just about the same, even when turbidities are as high as 1500 ppm., that is, providing the chemical treatment is right.

AVERAGE OF ONE MONTH'S OPERATION OF PLANT WITH CARBONATOR IN SERVICE

	Parts per Million			
	Raw Water	Settled	Carbonated	Filtered
Total alkalinity	193	48	49	50
Basicity	0	40	0	2
Caustic	0	8	0	0
Incrustants	58	32	30	32
Total hardness	252	80	79	82
Magnesium	21	..	..	11
Free CO_2	1	0	1	0
Turbidity	6	1	1	0

Bituminous Street Repair Methods in Baltimore

By Charles F. H. Foard

Superintendent of Street Repairs, Highways Department. Baltimore, Md.

THE bituminous macadam streets of Baltimore consist of rolled stone packed very tight and sealed with a coating of either tar or asphalt, using about 1½ gallons of tar or asphalt per square yard. In making up the water-bound macadam streets, fine dust with plenty of water is used as a binder instead of tar or asphalt. A bituminous coating has been laid over some of these water-bound roads after they have been in use for some time.

The heavy traffic of the city gradually works ridges into these bituminous coverings until the streets become very rough. These ridges or ruts constitute a serious hindrance to the traffic. If the ridges are allowed to stand and become deeper, they rapidly destroy the entire usefulness of the road. It is therefore of first importance to eliminate the ruts. The problem of accomplishing this has been an important one for the city highways department and has been studied very carefully. No really satisfactory method was discovered until the use of a Hauck surface heater solved the problem, so that we are now using four of these on street repair work.

The construction of our heater, which is balanced on two wheels, makes it very easily moved from place to place. It carries a 25-gallon oil tank which holds the oil for the burners under pressure. Kerosene with a gravity test of 40 degrees Baume is used as the fuel. The air pressure inside the tank is maintained at between 35 and 40 pounds. It is very easy to light the burners, and in five minutes they are ready for operation. The standard surface heaters have two oil burners mounted at one end of an asbestos-insulated hood. The flames from the two burners are thrown parallel to the ground inside the hood and spread out so that they cover practically the entire surface enclosed by the hood. Thus, almost all of the heat that reaches the road surface is indirect, as no part of the flame is directed against the surface. In this way an even, soft, soaking heat is provided, so that the road surface is softened uniformly without being burned.

The work is accomplished very rapidly and requires two men with each heater; one man wheels the heater into position so that the hood will cover the ridge or bump in the

COST OF OPERATING DOUBLE-BURNER OIL-BURNING SURFACE HEATERS

Depreciation—$230.00 ÷ 10 years	$ 23.00
*Average interest at 6% — $\frac{11}{10} \times \$230.00 \times .06 \times \frac{1}{2}$	7.59
Maintenance and repair allowance—(all parts except hoods and burners) per year	25.00
Repairs on burners per year	178.00
Repairs on hoods per year	125.00
Total fixed expense per year	$358.59
Total fixed expense per day—$358.59 ÷ 150 days	$ 2.39
Fuel oil per day—28 gallons x 11c	3.08
Labor per day—2 men for 8 hours	7.20
Total cost per day	$ 12.67
Previous cost by hand method—10 men x $3.60	$ 36.00
Net saving per day	$ 23.33

COST OF OPERATING SINGLE-BURNER OIL-BURNING SURFACE HEATERS

Depreciation—$170.00 ÷ 10 years	$ 17.00
*Average interest at 6% — $\frac{11}{10} \times \$170.00 \times .06 \times \frac{1}{2}$	5.61
Maintenance and repair allowance (all parts except hoods and burners) per year	25.00
Repairs on burners per year	99.00
Repairs on hoods per year	125.00
Total fixed expense per year	$271.61
Total fixed expense per day—$271.61 ÷ 150 days	$ 1.81
Fuel oil per day—16 gallons x 11c	1.76
Labor per day—2 men x 8 hours	7.20
Total cost per day	$ 10.77
Previous cost by hand method—6 men x $3.60	21.60
Net saving per day	$ 10.83

*Allowing for interest earned by depreciation reserve.

HAUCK SURFACE HEATER IN USE ON STREET REPAIR WORK

street to be smoothed off. It takes only a few minutes to soften the surface sufficiently to be worked, and the heater is then moved on to another place. The second man then rakes and rolls the soft ridges down into the grooves, so that the street is left smooth.

The use of the surface heaters has made a great improvement in this work. They make possible much better work and also materially decrease the cost. Before the heaters were used, the work was done entirely by hand. It was necessary to have men use mattocks and cut down the ridges and high spots. The material cut from the ridges was then placed in the ruts and tamped down. This was hard, tedious work and left a more or less rough surface. Because of the back-tiring nature of this work, it was difficult to obtain the men to do it, and hard to keep them on the job.

Two men working with one surface heater are able to cover from 2,000 to 3,500 square feet of street in an average 8-hour day. These two men with the heater actually replace ten men who were required to do the same work before the heaters were used. The detailed cost of operation of these heaters is shown in the table on page 604. The cost of operating the standard double-burner heater, including labor and fuel, amounts to only $12.67 per day, which is reasonable for the large amount of work accomplished. Comparing this cost with the labor cost of the former method shows a saving of $23.33 per day for each one of the double-burner outfits, and $10.83 for the original single-burner heater. The total saving for the four heaters, assuming an average use of only 150 days per year, amounts to $12,127 per year. This saving in a single year amounts to over thirteen times the entire cost of all four heaters.

Rochester Adopts City Manager Plan; Boulder Retains It

EFFECTIVE endorsement was given to the city manager plan at the November 3 election in Rochester, N. Y., and Boulder, Colo.

By a majority of some 12,000 the voters of Rochester adopted a new charter under which that city will, after January 1, 1928, join the list of important municipalities having the commission-manager form of government.

In Boulder, which is one of the four cities in the United States now having manager charters under which the city council is chosen by the Proportional Representation method of voting, an attempt to withdraw the charter by referendum vote was defeated. As a similar attack on the charter had been defeated in 1923, it would appear that most of the citizens of Boulder are well satisfied with their present form of municipal government.

Abominable Conditions in County Jails

THE United States Government, having no jails of its own, is using one-third of all the city and county jails in the country without paying any rent, and is boarding out more than 7,000 prisoners—including many who are merely awaiting trial—to local jails over which the Federal Government has no control and many of which are desperately overcrowded, reeking of physical and moral filth.

This, briefly, is the substance of a report submitted to the 55th Annual Congress of the American Prison Association on November 10 by Dr. Hastings H. Hart, Chairman of the Association's Committee on Jails, formerly President of the Association, now Consultant in Delinquency and Penology at the Russell Sage Foundation in New York City. The Committee during the last year has studied conditions in the 893 city and county jails and workhouses in which federal prisoners are kept.

Dr. Hart, who has been a member of the Prison Association for more than forty years and is one of the world leaders in the movement for prison reform, declared in submitting the report that his study of the treatment of federal prisoners in county jails has revealed "such abominable conditions" that he expects to devote the remainder of his life to seeking a correction of these conditions, and that the Russell Sage Foundation will pursue its studies in this direction with a view to correcting these abuses.

The Committee's report reveals that many of the county jails in which United States prisoners are confined, especially along the Canadian and Mexican frontiers and in large cities, are desperately overcrowded. Moreover, many of the county jails are unsanitary, and a very large percentage are infested with vermin. Most of them have an inadequate staff of employees, who have had no special training and are politically appointed, selected without reference to their special qualifications for the job. The report says, "These conditions result in hardship, not only to the United States prisoners, but also to the local prisoners who are subject to the same cond tions."

It must be remembered that a large part of these prisoners are unconvicted and a considerable portion are subsequently legally proven innocent; that the law requires that persons accused of crime shall be treated as innocent until proven to be guilty; and that a large part of the prisoners serving sentence are held for non-payment of a fine, simply because they owe the Government $10, $25, or $100. If they can pay the fine, they go scot free; if not, they remain subject to punishment far more severe than that which is given to felons in the United States penitentiaries, while the United States authorities who commit them have nothing whatever to say as to the treatment which they shall receive.

Not only does the present system inflict hardship upon federal and county prisoners, but it inflicts great injustice upon the taxpayers in the counties where such prisoners are confined. The United States boards its prisoners in the various county jails and pays for their board at so much per day. The Gov-

A Prolific Source of Crime

"It appears to your Committee," says the report of the American Prison Association's Committee on Jails, "that the present system of boarding prisoners in county jails is hopelessly unsatisfactory, from every point of view, to all concerned except to a limited number of county sheriffs or jailers. . . .

"A very small number of the 893 jails have proper provisions for the classification and segregation of prisoners. In most of the southern jails the only groups that can be segregated are white and colored, male and female, and not infrequently the conditions are such that women cannot be completely separated from men. . . .

"Even in the largest jails like the Tombs Prison and Raymond Street Jail in New York, the Moyamensing Prison in Philadelphia, and the jails in Baltimore, Pittsburgh, Cleveland, Chicago, and Denver, there is no adequate provision for classification and segregation. As a result, prisoners who are inexperienced in crime and committed to prison for the first time are forced into intimate association with those of the vilest character. There is made on them an indelible impression of humiliation and degradation.

"It is a fact well known to all who have given careful study to the subject that the county jails of the United States are breeding-places and schools for vice, and that there is no more prolific source of crime."

ernment tries to get as cheap a rate as possible. These rates range all the way from 20 cents per day in five jails in Porto Rico to $3 per day in three jails in Alaska. The average payment is 69 cents per day, but in 442 jails the payment is less than 69 cents.

In fixing rates, the Government barters with the county officials in exactly the same way as a man would barter with a boarding-house. One of the duties of the Federal Inspector of Prisons is to make new rates as new institutions are used, and to attempt to keep rates at existing levels where jailers or other county officials interested demand more money.

The Government too often has been more interested in receiving a cheap rate than in securing good jails. The federal prison officials are necessarily following a practice imposed upon them by years of custom, and by the fact that appropriations are limited.

The money received for the maintenance of federal prisoners goes either to the county or to the sheriff or jailer, depending upon the laws existing in a particular state. In the latter case, the sheriff or jailer gets a certain sum per day per prisoner. If the food costs him less, he is entitled to retain the difference. A more vicious system it would be impossible to conceive: that whereby the income of the officer depends upon what he can save from the food allowance of the prisoners.

The Committee's Recommendations

That the United States Government establish a jail system of its own, each jail to serve a territory with a radius of 50 miles, beginning with the points on the Canadian and Mexican borders where there is at present the greatest congestion of federal prisoners, and extending the system until the Government has jails of its own in all thickly settled sections of the country, was the recommendation made by Dr. Hart, in a second report, submitted to the American Prison Association on November 11. This, Dr. Hart said, is the only logical correction for the unsanitary, immoral, and inhuman conditions created by the overcrowding of city and county jails with boarded-out federal prisoners, as revealed in the report of his committee submitted the previous day.

Many counties are already refusing to receive federal prisoners, according to Dr. Hart's report, and the Government has consequently been compelled to use many jails unfit for use. In outlining the causes which have resulted in the present unsatisfactory state of affairs, the report says, in part:

"The amount paid by the Federal Government to city and county jails for the care of prisoners admittedly makes no allowance whatever for rent, and in many cases it barely covers the cost of feeding without any allowance for guards, bedding, furniture, heat, and light. The failure to provide for rent has been defended on the ground that the counties have to maintain the jails anyhow and that the presence of the United States prisoners does not make any increase of cost for jailer service, light, heat, and so forth. It is argued further that the prisoners usually belong to the community in which they are confined and that it is only fair that they should bear the expense. The members of the committee reject this line of argument; they say that on the same principle the local community might be required to pay the salary of the judge and the United States Marshal.

"The committee calls attention to the fact that the burden of this expense is thrown on about one-third of the counties of the United States. They call attention further to the fact that the jails have been built by special taxation and that many counties are still paying interest on the money which built the jails. For example, Los Angeles County, Calif., which cares for many United States prisoners, is just completing a county jail costing $3,000,000. Cook County, Chicago, is about to build a new county jail, and a number of new county jails have recently been built in different parts of the South. In some cases jails are being enlarged in order to make room for United States prisoners. Why should these local counties be asked to tax themselves and to pay interest on bonds for jails to be used by the Federal Government without payment of rent?

"It is as if the Postmaster General were to say to the Mayor of Los Angeles or Chicago: 'Owing to the increase of the parcel post business, we have not sufficient accommodation in the Post Office building. We want you to give us the use of one-third of the City Hall building for Post Office use. We will do the janitor work, but we will pay nothing for rent, light or heat.' The one proposition is no more unreasonable than the other. . . . .

"In the meantime, the compensation to local jails for maintenance of federal prisoners should be made sufficient so that the counties will not be obliged to do the work at less than cost and the Government can require proper care for its prisoners.

"The evils of the county jail system here depicted have been recognized for one hundred years past, and for fifty years vigorous efforts for the reformation of the system have been carried on by state boards of charities and correction or state prison associations in certain states—Massachusetts, New York, Pennsylvania, Ohio, Indiana, Illinois, Minnesota, Colorado, Virginia, South Carolina and Alabama. These bodies have worked earnestly and faithfully for the improvement of the system, but for the most part with little effect, because the jails are under the control of county boards which are constantly changing, and whose action is largely controlled by considerations of economy. The difficulty has been further increased by the fact already mentioned of the sense of proprietorship on the part of sheriffs.

"In localities where the number of United States prisoners is large and the jail accom-

modation is limited, a department has often been compelled to increase the rates to jails where the service was inferior, while other jails which had spare room have received a lower rate for better service. United States prisoners from the city of New York, where the rate paid is 90 cents per day, were boarded in New Jersey jails where the rate was 75 cents per day.

"The Federal Government pays the city of Detroit for sentenced prisoners kept in the Detroit House of Correction $1 per day, but it sends prisoners awaiting trial from Detroit to Toledo, Ohio, where Lucas County boards them at 55 cents per day."

Municipal Library Expenditures and Circulations Per Capita, 1924 or 1925

Compiled by George F. Bowerman
Librarian, Public Library of the District of Columbia

COMPILER'S NOTE.—The population figures are the Census Bureau's estimates as of July 1, 1924; the figures of expenditures, circulations, and branch libraries are furnished by the American Library Association or directly by the library.

These annual tables have sometimes been criticised because they seem to disregard reference work and to assume that all of the library expenditures are devoted to circulation work. Such is not the case. In most public libraries circulation work and reference work run parallel and are fairly comparable in volume. Circulation work is everywhere measured in terms of definitely recorded figures; few libraries attempt to keep any figures showing volume of reference work. It is therefore believed that computations based on the circulation figures are rough but fairly accurate indices of the library's work. High expenditures per volume circulated usually indicate two things—(1) a better paid staff, and hence (2) a larger measure of expert reference work.

Cities (ranked according to population)	Population (census estimate July 1, 1924)	Expenditures, 1924 or 1925 (exclusive of extraordinary expenses)	Per capita expenditures	Home circulation (volumes)	Expenditure per volume circulated	Per capita circulation (volumes)	Number of branches	buildings devoted exclusively to library purposes
New York City	6,015,504	$2,227,351.94	$0.370	17,610,181	$0.126	2.93	94	74
N. Y. Public Library[1]	3,264,363	1,225,354.21	.375	9,549,876	.128	2.93	46	44
Brooklyn	2,196,210	737,428.57	.336	6,083,870	.121	2.77	28	23
Queens	554,931	264,569.16	.477	1,976,435	.134	3.56	20	7
Chicago	2,942,605	1,377,741.26	.468	10,613,978	.130	3.61	46	5
Philadelphia	1,951,076	578,370.15	.296	4,221,143	.137	2.16	28	28
Detroit	[2]1,398,850	942,288.19	.674	3,779,899	.249	2.70	17	17
Los Angeles	[2]925,000	717,135.23	.775	5,050,022	.142	5.46	44	19
Cleveland	912,502	1,219,303.55	1.34	5,967,610	.204	6.54	56	18
St. Louis	812,698	462,081.18	.569	2,415,513	.191	2.97	12	6
Baltimore	784,938	317,221.52	.404	993,431	.319	1.27	25	24
Boston	776,783	845,335.40	1.09	3,132,194	.270	4.03	31	11
Pittsburgh	626,015	576,635.29	.921	2,309,404	.250	3.69	10	9
Old City	.....	480,598.26	.....	1,807,377	.....	.....	9	8
Allegheny	.....	96,037.03	.....	502,027	.....	.....	1	1
Milwaukee[3]	588,702	315,312.92	.536	3,163,619	.100	5.37	13	3
San Francisco	548,284	261,827.40	.478	2,157,707	.121	3.94	10	9
Buffalo	545,273	280,770.75	.515	2,232,652	.126	4.09	7	2
Cincinnati[3]	508,947	316,943.64	.623	2,067,269	.153	4.06	26	11
Washington	486,936	226,508.42	.465	1,092,533	.207	2.24	3	3
Minneapolis[3]	453,400	418,606.59	.923	2,264,611	.185	4.99	19	9
Newark	445,606	318,425.80	.715	1,159,398	.275	2.60	4	4
New Orleans	409,534	85,207.08	.208	610,728	.140	1.49	5	5
Kansas City	359,650	223,867.26	.622	1,399,706	.160	3.89	14	2
Indianapolis	351,073	315,692.62	.899	1,762,387	.179	5.02	19	12
Seattle	[2]346,556	290,709.92	.839	2,152,585	.135	6.21	9	6
Rochester	325,211	156,325.23	.481	1,485,468	.105	4.57	10	3
Jersey City	312,157	195,388.43	.626	1,458,342	.134	4.67	9	3
Birmingham[4]	[2]300,000	83,357.48	.278	660,180	.126	2.20	8	8
Portland[3]	298,904	292,597.10	.979	2,387,743	.123	7.99	18	13
Louisville[3]	297,237	150,376.48	.506	1,277,543	.118	4.30	14	9
Toledo	280,359	218,817.34	.780	1,244,671	.176	4.44	12	5
Denver	276,471	167,978.63	.608	1,385,999	.121	5.01	11	8
Columbus	268,209	57,562.25	.215	296,839	.194	1.11	0	0
Oakland	246,893	149,612.42	.606	1,031,182	.145	4.18	13	9
St. Paul	243,946	225,407.87	.924	1,447,571	.156	5.93	4	4
Providence	243,745	238,301.75	.978	877,135	.272	3.60	7	1
Atlanta	[2]240,000	93,517.89	.390	639,624	.146	2.67	3	4
Omaha	208,025	90,398.25	.435	655,625	.138	3.15	4	2
Total and average	25,731,089	14,436,977.23	.633	91,004,492	.169	3.91	610 17.94	348 10.24

[1]Circulation department only.
[2]Estimate by librarian; no estimate by Census Bureau.
[3]City and county.
[4]City and county exclusive of Bessemer and Fairfield, which have separate library systems.

Handling Material for Sprinkling-Filter Reconstruction

More Than 160,000 Cubic Yards of Slag Handled at East Sparta, Ohio, for Reconstruction of Canton's Sewage Disposal Plant

THE reconstruction of the sewage disposal plant of the city of Canton at East Sparta, Ohio, required the moving of more than 160,000 cubic yards of slag by the Holmes Construction Company. About 80,000 yards were removed from the filter beds, and the beds were then rebuilt and refilled with fresh slag. The old slag was highly impregnated with organic material and was loaded onto trucks by two clam-shell buckets and one Barber-Greene self-feeding bucket loader. It was found that the daily output was about 1,000 yards of slag, of which about 600 cubic yards were handled by two cranes, and 400 cubic yards by the loader.

For handling the new material, a unique system of portable belt conveyors has been installed. Slag, furnished by the Standard Slag Company, Cleveland, Ohio, is received in railroad cars. When it has passed inspection, it is dumped from the cars into a small steel track hopper which feeds onto a long portable belt conveyor. The belt is 18 inches wide by 30 feet long and is provided with steel cross-cleats which make it possible for this machine to carry the slag up easily from the pit and discharge it onto the next conveyor. The conveyor in the pit is mounted on wheels, so that it can be moved from one track pit to another as the filter beds are filled with their quota of slag.

The second conveyor is a shuttle with an 18-inch by 60-foot belt. The machine is mounted on four extended legs which carry axles and single-flanged wheels which run on standard 30-inch gage industrial track. With this shuttle mounting it is possible to deliver the slag 60 feet or more in either direction from a track pit. This obviates the necessity for many track pits, which is quite a consideration. The filter beds are 880 feet long. With the use of the shuttle, the track pits are placed 150 feet apart and there are only 6 of them. The belt on the shuttle conveyor, which is electrically driven, can be run in either direction.

From the shuttle, the slag is delivered to an 18-inch by 111-foot belt mounted on special trucks so that it can be moved at right angles to its length. The trucks are made with four

HANDLING SLAG FROM AND TO SEWAGE FILTERS

Upper left.—Barber-Greene wagon loader removing old slag and loading truck. Upper right.—Thirty-foot portable belt conveyor handling slag from small steel track hopper Lower left.—The second conveyor, 60-feet long, which obviates the necessity for many track pits. Lower right.—Crawler chassis with 81-foot belt and swivel discharge chute at delivery end of conveyor system

wheels to run on 30-inch gage track. Since this conveyor is being supported much of the time on the newly laid slag, the trucks are flexibly attached to the conveyor supports, thus allowing considerable variation for irregularities in the tracks. In order to reach the filter beds farthest from the railroad track, the whole basin being 440 feet wide, it is necessary to extend the reach of the conveyor system by means of another belt similar to the 111-foot machine. This machine is 220 feet long.

A tractor-crawler chassis taken from a model 42 Barber-Greene bucket loader carries the last conveyor, an 18-inch by 81-foot machine. The connection between the chassis and the conveyor is such that the crawler unit can turn about freely under the conveyor. While the stone is being discharged into the filter bed from the belt of this machine, the chassis is moved so as to "fan" the conveyor about its hopper as a pivot. Further flexibility is obtained in this machine by the use of a swivel discharge chute 15 feet long.

When moving from one set-up to another, the crawler chassis is turned at right angles to its "fan" position and either pushes or pulls the hopper end along the slag fill to the new position.

All the conveyors are driven with electric motors suitable for their size. The crawler chassis is driven by a Buda gasoline engine. When the job is completed, the Holmes Construction Company plan to take this chassis add the necessary boom and feeder, and thus have a standard Barber-Greene self-feeding bucket loader which they can use on their road work.

A car of slag is easily unloaded and deposited in the filter beds over the conveyors with only 3 to 5 men in 40 minutes. From 10 to 12 cars a day are easily handled.

Concrete Bridge Replaces Historic Wooden Structure

New Clark's Ferry Bridge Over Susquehanna River Near Harrisburg Recently Completed

THE new Clark's Ferry bridge over the Susquehanna River near Harrisburg, Pa., has recently been completed and is an outstanding example of modern engineering skill and architectural design. The structure is ranked among the largest concrete bridges, measuring about half a mile from shore to shore. With a roadway of 20 feet, the bridge is capable of handling two lines of traffic and, even with the time involved in the collection of tolls, is easily capable of taking care of 18,000 cars a day. This concrete structure is of a very attractive design, and the score of big arches between the piers rise to a considerable height above the river surface, thus giving ample security against flood waters and ice jams.

The design and supervision of the construction

DAY VIEW OF THE NEW CLARK'S FERRY BRIDGE

CLARK'S BRIDGE ILLUMINATED

of the bridge was handled by Frank Milton Masters of Harrisburg, Pa., with Ralph Modjeski, Chief Engineer of the Delaware River Bridge Commission, as consultant and Professor Paul P. Cret, University of Pennsylvania, as consulting architect. Mr. Masters has for some 20 years collaborated with Mr. Modjeski in bridge design and construction, a recent structure of their joint creation being the new Market Street Bridge at Harrisburg.

In the design of the bridge structure particular stress was laid upon the ornamentation of the roadway. At the suggestion of the Pennsylvania State Art Commission, provision was made for a layout of light standards which were designed by Professor Cret and executed by Westinghouse. A special Westinghouse lantern was adopted and incorporated in the design of each of the light bases for the respective arches and abutments at the bridge approaches.

Construction of the bridge began in June, 1924, and was completed in June, 1925, in exactly one week less than a year. The work was done by the Vang Construction Company, Cumberland, Md., and is said to be a record for this type of work. Immediately after, the lighting engineers began the installation of the illuminating fixtures, completing the job the latter part of August. For the present, 12,000 watts will be required to illuminate the bridge and approaches. With this amount of illumination, automobiles may readily cross the bridge with headlights shut off. The new bridge, supplanting the old covered structure built 97 years ago and now being torn down as rapidly as possible, will carry the traffic of two national highway systems, the Susquehanna Trail and the William Penn Highway. Thousands of cars are already crossing the bridge daily, according to the officials of the Clark's Ferry Bridge Company, owners of the structure. More than 50 per cent of this traffic represents cars coming from states other than Pennsylvania.

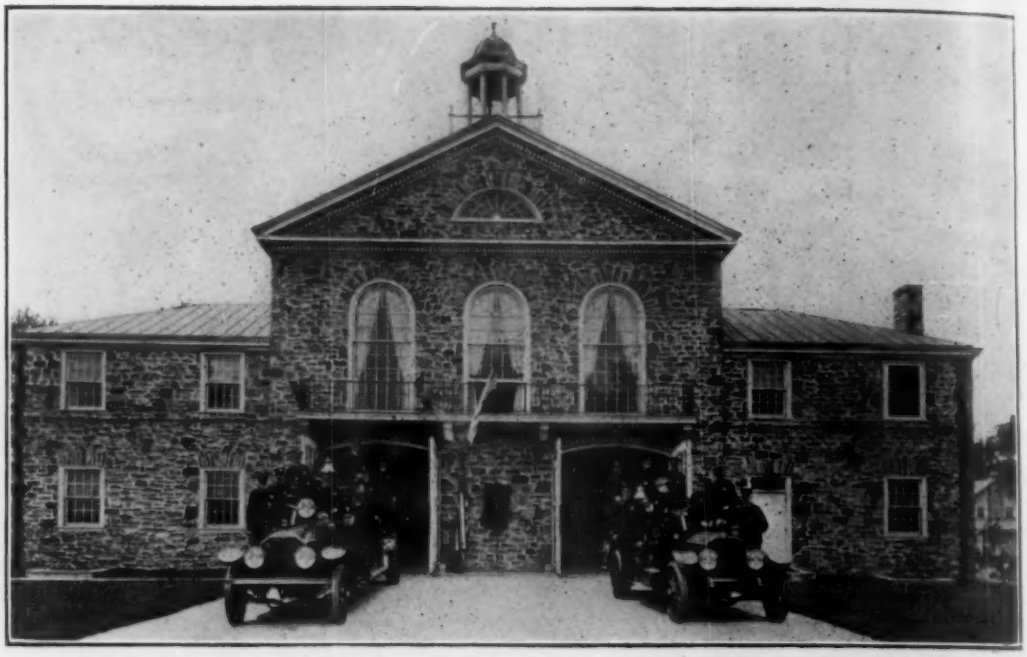
The earliest means of transportation over the Susquehanna River near this point was a ferry owned and operated by Robert Clark, son of Daniel Clark, the American pioneer who in 1788 founded at this location what subsequently became known as Clark's Ferry. In 1828-29 the Commonwealth of Pennsylvania replaced the ferry with a dam and a highway toll-bridge, supporting a towing path, which was constructed and operated as a part of the state canal system for the purpose of transporting canal-boats across the river. In 1857 the Commonwealth of Pennsylvania sold its entire canal system to the Pennsylvania Railroad Company, which company in 1887 organized and transferred this property to the Pennsylvania Canal Company, operated as a part of the Pennsylvania Railroad Transportation System. In 1915 the Pennsylvania Canal Company, having abandoned the canal operation then entirely replaced by the railroad system, sold the bridge to its present owners, the Clark's Ferry Bridge Company.

$2,500 Award for Program to Reduce Crime in New York City

RECOGNIZING the present appalling tendencies in law-breaking and in the public attitude toward it, the Society for the Prevention of Crime has offered an award of $2,500 to the author of the best program of practicable steps to reduce law-breaking in New York City. The contest will close on January 11, 1926.

Through this contest the Society seeks to encourage popular interest in the observance of law and public safety and to collect a wide-spread expression of thought and opinion on this very vital subject. The offer is open to every private citizen and public official and to all proposals whether heretofore published or not. Further details as to the rules of the contest may be secured from the Society, Room 920, 1819 Broadway, New York.

Fire-Stations Which Add to the Attractiveness of a Village



The attractive suburban community of Mamaroneck, N. Y., has six volunteer fire companies, all of them housed in stations which are a credit to the village. Two of these stations—those of the Weaver Street Fire Company and of the Halstead Manor Hose Company—are here shown. The apparatus shown above is of American-LaFrance manufacture

Photographs by Nightingale

Public Comfort Stations

A Discussion of Factors Involved in Their Location, Construction, Equipment and Maintenance

By Frank R. King

State Plumbing and Domestic Sanitary Engineer, Wisconsin State Board of Health

AMERICA has often been accused of gross deficiency in the extent to which sanitary necessities in public places have been provided. Some foreign countries have taken the lead in erecting public comfort stations in congested areas. In the United States the progress made has been sporadic and limited, and usually without official impetus.

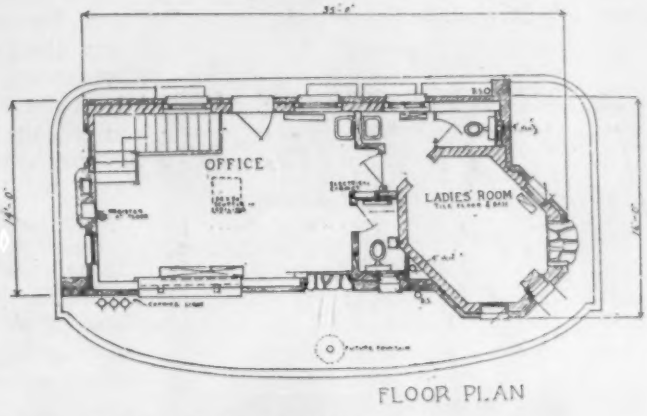
Wisconsin, which for the past six years has been giving this movement attention by virtue of a state law encouraging public provision for meeting human needs, represents the only example of a state-sanctioned policy in furthering this program. It was pioneer work in this field of sanitation, and, although slow if measured by cold figures, the movement may now fairly be called successful.

The Wisconsin law requires all cities and villages—469 in all—to furnish state-approved facilities for the comfort and convenience of the public, in centrally located, sanitary quarters. Approximately 120 cities and villages thus far have complied, some but partially, it is true, but with a well-defined plan for meeting public needs. About 40 more are listed for action in compliance with the statute. It should be explained that nowhere is there opposition to the idea of comfort stations on a public basis. Rather is the delay due to financial stringency in many places.

The location, construction, and maintenance of stations are governed by the Wisconsin Public Comfort Station Code, issued by the State Board of Health. The main essential required is central location and accessibility. Although many parks are supplied with comfort stations, these if not centrally located to serve the greatest number of people are not approved as substitutes for public stations contemplated by the statute.

Expensive Outlays Not Required

Although buildings constructed especially



FLOOR PLAN

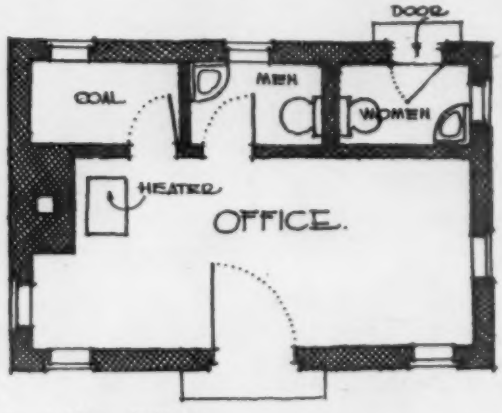
Foeller, Schober & Stephenson, Architects

ONE OF SIX SIMILAR ARTISTIC OILING STATIONS WITH REST ROOM AND TOILET FACILITIES

The design and general arrangement are shown in the floor plan. Stations located at Waupun, Walworth, Lake Geneva, Marinette, Madison and Green Bay. They render service to the auto traveler and others alike

for the purpose are in many respects most desirable, the law does not require such expensive outlays. Rooms in existing structures that can be remodeled and equipped will fulfill the requirements—a practice tending to economy. As a rule, also, this practice takes advantage of heating equipment, water-supply and drainage, as well as janitor service, of the building proper. As every sanitarian knows, careful, constant supervision is essential for such utilities, without which a public comfort station is likely to become a public nuisance.

When public water-supply and sewerage are available, comfort stations in Wisconsin must be of the water-flushed type. Otherwise, outdoor toilets of an approved type are permitted. For these, detailed specifications are outlined in the code. Special emphasis is directed in the code to the necessity for marking stations plainly. Standard signs, approved for this purpose universally, are outlined in colors for the guidance of the public. Other signs indicate men's and women's compartments, and highway indicators are sometimes used to give directions to the nearest comfort station. Comfort station signs are furnished to municipalities at cost by the State Board of Health.



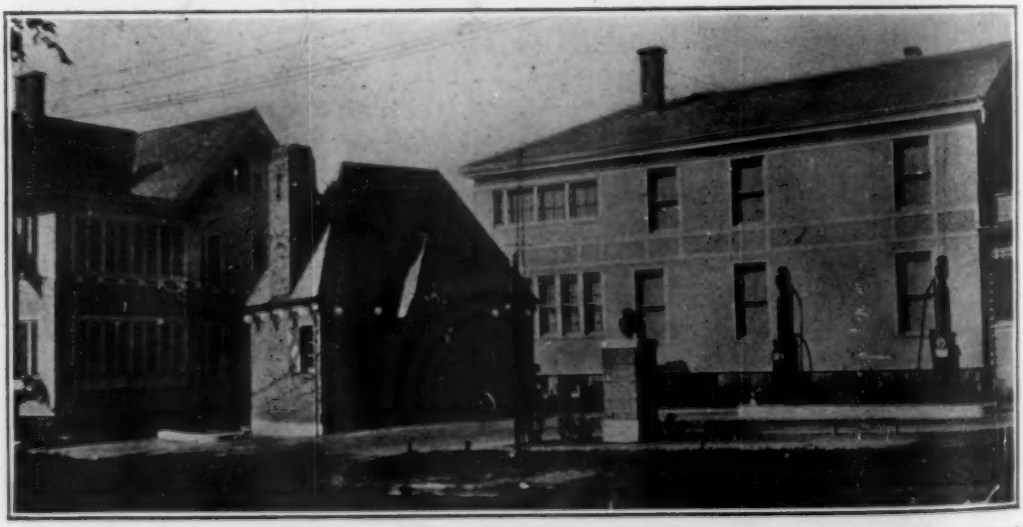
Frank Riley, Architect

The term "public comfort station" denotes a structure planned for the convenience of the general public, in which the use of sanitary toilet facilities constitutes the principal service rendered. It is generally desirable to maintain rest rooms in connection with them, and these are permanently established in many Wisconsin cities. A public comfort station may take the form of a privy or an inside toilet room with washing facilities—the type depending upon the size of the community, the availability of water and sewerage connections, and the amount of funds at disposal for the purpose. Sanitary equipment of only the highest grade should be employed, inasmuch as constant public use makes the wear and tear more injurious than in the average toilet room.

As these stations are for the public's benefit, provision for their erection and maintenance should be regarded as a public function, supported by the funds of the state or municipality. Such funds may be raised by direct taxation or bond issues.

Location and Operation

The maximum success of public comfort



FLOOR PLAN AND EXTERIOR VIEW OF A SMALL, INEXPENSIVE, BUT ATTRACTIVE COMBINATION OILING AND COMFORT STATION, MADISON, WIS.

stations depends largely upon their central location, which means they should be established in the more congested districts and where they are easy of access. They must be so located that they will not be shunned and that they may be easily found. From the viewpoint of economy, ease of access, and central location, existing public buildings usually afford desirable sites for establishing comfort stations. Thus, a municipality may utilize a court-house, municipal building, school, fire, or police station, library, public market, or similar institution. Other suitable sites are public squares, parks, playgrounds, bath-houses, cemeteries, band-stands, and bridge abutments. Semi-public places such as oiling stations and railroad stations are suitable for the purpose, and in some cases the facilities may be housed satisfactorily in connection with other places of business, such as stores or similar mercantile centers.

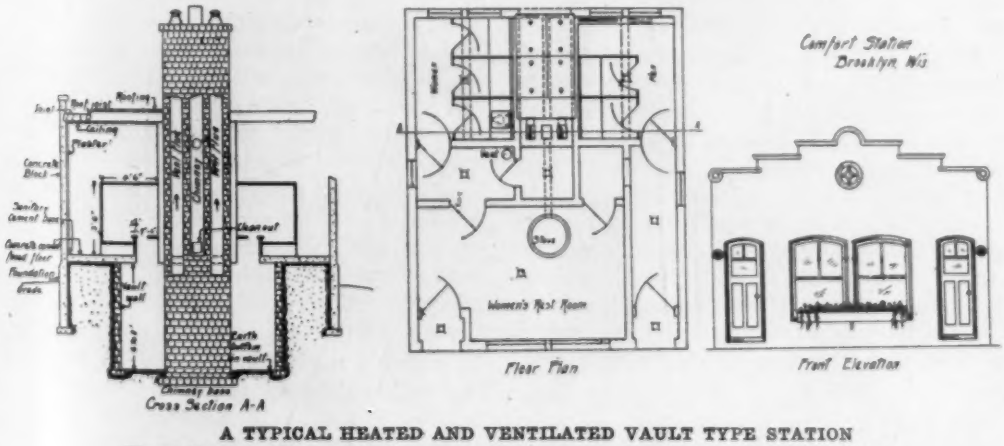
INTERIOR VIEW OF A REST ROOM AND COMFORT STATION AT EAU CLAIRE, WIS.

Another course open for communities, especially cities, is the erection of public comfort stations in the form of substantial, permanent, and artistic structures independent of existing buildings. There are possibilities for the development of this type of station as real municipal centers for public convenience. Following successful experience in many large cities, they may be made to pay, in part at least, the expense of operation through concessions, such as pay telephone booths, parcel check stands, vending machines, shoe-shining stands, newspaper and magazine privileges, and counters for the sale of souvenirs, post-cards, toilet articles, towels, soap, and auto conveniences. Primarily, however, the public comfort station should be regarded as a free public institution, with toilet and washing facilities open to everybody, and the auxiliary features mentioned should in no way be allowed to supplant this free, public use nor to change in the slightest degree the public character of the stations.

A summary of the location of stations with respect to choice of sites shows that 33 are in independent buildings, no part of which is used for other purposes; 42 are in city or village halls; 42 in store buildings; four in court-houses; 15 in libraries; 10 in community halls; 5 in auditoriums; 3 in bank buildings; 6 in bridge abutments, and 16 in miscellaneous locations. There also is a record of about 300 gasoline filling stations which furnish toilet facilities to the public, and many parks affording like accommodations.

Submission of Plans

Before proceeding with the location, de-



A TYPICAL HEATED AND VENTILATED VAULT TYPE STATION
The station is so designed that it may readily be equipped with water-flushed facilities

PARK STATION AT BEAVER DAM, WIS.
The location is such as to render service for a tourist camp site and to the general public during summer months

sign, and construction of a public comfort station or rest room, plans and specifications should be submitted for approval to whatever authority is vested with such power. When construction proceeds, no changes in such plans should be made without official permission.

Adequacy of Toilet and Washing Accommodations.—Toilet accommodations to serve the needs of the community depend for their adequacy upon local conditions, so that no definite rule can be laid down. Information available, however, indicates that, under normal conditions at least, there should be one closet for every 1,000 females and at least one closet and two urinals for every 1,000 males in the community, assuming that the population, or the number deemed likely to frequent the station, be divided in the ratio of 40 per cent females and 60 per cent males.

Design of Station.—The design of the station should be such as to harmonize with its surroundings and meet the needs of the community. It should be constructed in a neat and substantial manner in accordance with recognized standards and practices. The designer should bear in mind that four walls, a roof, and a door do not constitute a modern comfort station or rest room. Its location, arrangement, and sanitary appliances are all-important factors in insuring the safety, comfort, and sanitation which the visitor expects and demands.

Entrance Screen.—The entrances to toilet rooms should be separated by screens or other means, and wherever possible should be at least 20 feet apart or otherwise located with due regard to privacy for users.

Uniform Sign Required.—Every public comfort station should have displayed conspicuously the standard public comfort station sign. There should also be placed marks indicating women's and men's entrances. The uniform sign should be placed at other points best adapted for guiding the public.

Ventilation and Light.—When housed within a building, a public comfort station should be so placed as to afford light and air by windows or skylights, or open directly upon a street, alley, court, or vent shaft. Such a vent shaft should have a horizontal area of at least 1 square foot for each water-closet or urinal, but the least dimension of the shaft, if one story high, should not be less than 3 feet; if two stories high, not less than 4 feet; and 1 foot additional for each extra story.

The glass area for a toilet room containing one closet or urinal should be at least 4 square feet, with 2 square feet additional for each additional closet or urinal.

Size.—Every public comfort station should have at least 10 square feet of floor area and at least 100 cubic feet of air space for each water-closet and each urinal, together with adequate waiting-room area.

Floor.—The floor and base of every public comfort station should be made of material (other than wood) which does not readily absorb moisture and which can easily be cleaned. They should be of concrete faced

with a cement, tile, or marble surface, or equivalent material. To make a concrete floor non-absorbent, the concrete and cement top dressing must be a dense, rich mix, finished smooth, and kept well painted.

Floor Drains.—Toilet rooms of this type should be provided with a hose faucet, and the floor should be graded toward a drain equipped with an adequate 4-inch trap having a movable floor grate or strainer.

Walls and Ceiling.—The walls and ceilings should be completely covered with smooth cement or gypsum plaster, glazed brick or tile, galvanized or enameled metal, or other smooth, non-absorbent material. In the less-frequented or inexpensive stations, wood may be used if well covered with two coats of body paint and one coat of enamel paint or spar varnish. But wood should not be used for separating walls or partitions between toilet rooms nor for partitions which separate a toilet room from any room used by the opposite sex. All such partitions should be as nearly sound-proof as possible.

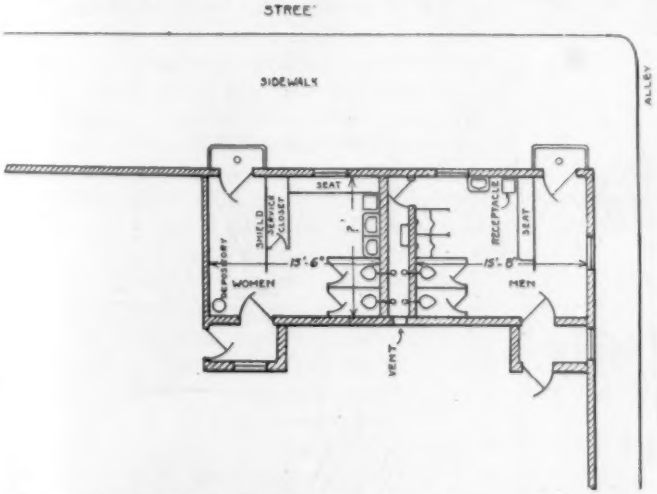
Partitions Between Fixtures.—Adjoining water-closets should be separated by partitions. For privacy, individual urinals should be provided with a partition at each end and at the back. Where individual urinals are arranged in batteries, a partition should be placed at each end and at the back of the battery. A space of 6 to 12 inches is required between the floor and the bottom of the partition. The top of the partition should be from 5½ to 6 feet above the floor. Doors of the same height as required for partitions, should be installed for water-closet compartments.

A SMALL STATION AT WAUWATOSA, WIS.

Toilet compartments should be not less than 30 inches in width and must be sufficiently deep to permit the door to swing past the bowl, when opened. All such compartments should be at least 30 by 52 inches in the clear. Partitions and doors should be of material and finish as prescribed for walls and ceilings. Wood is not recommended; if used, it should be hardwood.

Service Closet.—Each toilet room should have a service closet supplied with broom, mop, bucket, soap, toilet paper, toweling, lime or other disinfectant for waterless stations, and any other materials necessary for maintaining cleanliness and serving the public's needs.

Depositories.—Men's and women's toilet rooms should be equipped with a depository, so designed as to make the contents readily removable, and of such construction as to enable it to be kept in a clean condition.



SHOWING THE GENERAL ARRANGEMENT OF A STATION IN CONNECTION WITH A MERCANTILE ESTABLISHMENT

Water, sewer, light, heat, and attendant service furnished by the city. Walls and equipment on a lease-rental basis. A number of other arrangements to defray cost are equally practicable

Plumbing Fixtures

Method of Installing.—All plumbing fixtures should be installed to afford ready access for cleaning. Where practicable, all pipes in connection with the fixtures should be run to the wall.

Materials and Construction.—All plumbing fixtures should be of such design, materials, and construction as to insure durability, proper service, and sanitation and so as not to entail undue effort to keep them clean and in proper operating condition.

Water-Closets.—All water-closets should be made of

porcelain or vitreous chinaware. The bowl and trap should be of the combined pattern in one piece, and equipped with adequate flushing rims, so as to cleanse the bowl properly when discharged. The bowl should be of the heavy pattern with large throatway of the blowout or siphonic action type. The seats should be of wood or other non-heat-absorbing materials, finished with varnish or other substance to make them impervious to water.

Frost-proof closets should be installed only in compartments which have no direct connection with any building used for human habitation. This type should be used only in buildings subject to extreme frost conditions. When frost-proof closets are installed, the bowl must be of vitreous chinaware or iron enameled inside and outside of the flush-rim pattern. The adequate tank should be automatically drained to guard the fixtures and piping against frost.

PUBLIC COMFORT STATION FINDERS AND MARKERS

The uniform symbols should convey their meaning wherever found. They should also signify service and imply comfort, safety and sanitation

Urinals.—Urinals should be made of material impervious to moisture, which will not corrode, and so built that they may be properly flushed and kept sanitary. In new installations, only individual urinals should be used, of porcelain or vitreous china, set into the floor, and the floor graded toward the urinal, and equipped with an effective automatic tank or valve or a satisfactory foot-operating flushing device.

Wash-Basins.—Wash-basins should be made of earthenware, vitreous chinaware, enameled ironware, or other impervious material.

Drinking Devices.—Bubblers and other drinking devices should be of approved sanitary design and construction. Water pressure and volume should be such that one may drink without the lips coming in contact with the bubbler head or orifice. No drinking device should be maintained that is an apparent transmitter of disease.

Fixtures in Unheated Buildings.—In buildings where extreme, unavoidable frost conditions prevail, the trap serving sinks, wash-basins, or similar fixtures may be located under the floor or otherwise properly protected against frost, but should be as close to the fixture as practicable.

Where Water and Sewerage Systems Are Not Available.—In localities lacking public systems of water and sewerage, the disposal of human wastes may be accomplished as follows:

NOTICE TO PUBLIC

The commission of any of the following acts is prohibited by law and made punishable by a fine not exceeding $500 or imprisonment for one year for each offense:

(1) Wilful misuse of or tampering with the sanitary or other equipment.

(2) Cutting or other defacement of walls, seats or any part of this building.

(3) Writing, printing or displaying of any indecent pictures, obscene words or marks upon any part of the building.

(4) The commission of any nuisance in or about the building.

(Signed).....

(1) By an efficient water system of the "compressed-air storage" or "air-pressure delivery" type and a proper sewage treatment tank and disposal units, as conditions may require;

(2) By privies or other facilities permitted by the authorities, when conditions make it impracticable to install a water-supply and sewage disposal system.

Other Details

When Open for Use.—Every public comfort station should be open for use from sunrise to 10 P. M., unless otherwise decreed. On occasions such as the assembling of large numbers of people, the local authorities should designate a later hour of closing.

Cleanliness.—Every public comfort station and all its parts, including walls, floors, and ceiling, and all fixtures, should be kept clean, efficient and in good repair.

Towels, Soap, Paper.—A supply of towels, either of cloth or paper, liquid soap and dispensers for the same, and toilet paper, should always be kept ready for use. Toilet paper should be of material incapable of obstructing plumbing fixtures.

Care of Comfort Stations.—The proper authorities should assign the care and maintenance of public comfort stations to responsible persons such as the custodian of the municipal building or police officer. Governing bodies should vest attendants with full authority over the property and maintenance of stations and rest rooms, and furnish them with detailed instructions for the proper fulfillment of their duties.

Indecent Pictures and Writing.—Strict rules against defacements should be adopted for public comfort stations, and a public notice containing a penalty for violations should be posted in every station.

Existing Stations.—Existing public comfort stations should be brought up to a standard conforming reasonably with these requirements.

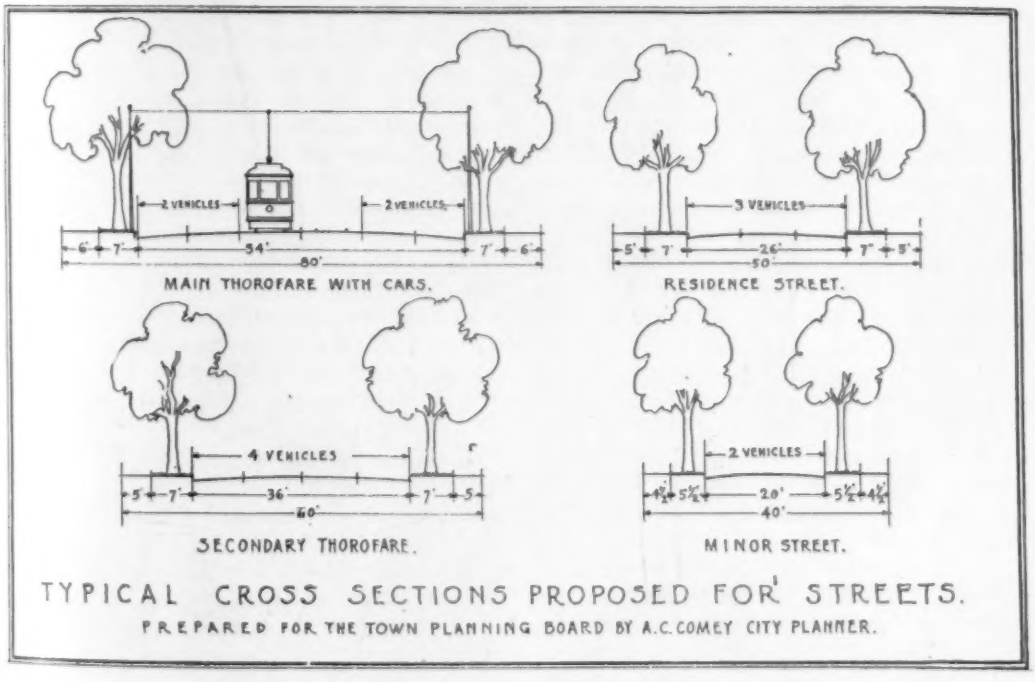
In this summary for small comfort stations no attempt has been made to cover minor details of design, materials and construction. It is believed, however, that the information is specific enough to serve municipalities, officials and others as a general guide for small and large stations.

References:

Wisconsin State Comfort Station Code, issued by the Wisconsin State Board of Health, Madison, Wis. (A charge of 50c per copy is made to non-residents of this state.)

Hool & Johnson, Handbook of Building Construction, McGraw-Hill Publishing Company, New York.

Street Sections Suggested for Wakefield, Mass.



TYPICAL CROSS SECTIONS PROPOSED FOR STREETS.

PREPARED FOR THE TOWN PLANNING BOARD BY A.C.COMEY CITY PLANNER.

Observations on the Naming and Marking of Streets

By Nathan Nelson Wolpert

TO one who is a stranger in any of our American cities, with street names as the only guiding beacons, it is a wonder that city planners and municipal officials have not devoted more thought to the naming and marking of streets.

The writer has made a study of 360 cities in the United States in the course of his work, most of them having a population of at least 25,000 inhabitants, and selected from almost every state in the Union. Analysis of street names and their derivation brings forth much local history—or lack of it. It has been the practice for realty operators in developing large tracts of land to name some of the newly opened streets after members of the family. This procedure gives rise to many personal names in street nomenclature that have no historical significance. In some cases one even finds names like John R. or Stella B., names that are confusing to business men because of the suffix letter, which seems superfluous. The city officials should be the ones to decide on new street names and not the realty operator who deeds the thoroughfare to the city.

A Service Worth Rendering

Street names were originated to differentiate one highway from another; house numbers were established to distinguish one house from another. A city whose guiding beacons fail in this purpose impresses the traveler as an unfriendly place or one in which it is difficult to orient oneself. With cities vying with one another for the transient and the visitor, attention to the naming and marking of the streets and the proper numbering of the houses will be effort well repaid.

The study of street names ought to give one a clue as to the character of the city. For example, in Coney Island, the chief avenues are called Neptune, Surf, and Pacific. Long Beach, N. Y., also a popular seashore resort, prefixes the word "Beach" to the names of all the cross-streets. Cities in the Southwest are rich in street names derived from Spanish words or otherwise indicative of the fact that the city was founded by Latin-speaking people.

Certain street names are often associated with public buildings or institutions and the topographical features of a city. Streets along the river front are named River, Front or Water. If the street is a residential one, it is Riverside, and if of high altitude, it is called Rivermont or Riverview. It is a good plan to name streets after colleges or public buildings, since it is far easier to remember the general location of points of interest than street names. College streets are either University or College; a state building gives rise to State Street, and others are responsible for Court or City Hall. Names like these break the monotony of numbered streets or avenues and aid one in remembering the outstanding characteristics of the city.

Systematic Naming of Streets

There are various methods of planning names for streets. The commonest and simplest way is to number all streets, naming those going north and south, avenues, and the thoroughfares at right angles to the avenues, streets. This plan, while reducing confusion to a minimum, can be favored only by towns that have their streets laid out at right angles. It is void of local coloring and history, and seems harsh to one of esthetic tastes.

A custom that has found a great deal of favor is the naming of streets in alphabetical order. This affords an opportunity to commemorate local history and to avoid the monotony of numbered streets. Where there are undeveloped tracts of land through which thoroughfares may be cut, the alphabetical idea is not feasible unless very carefully worked out.

Certain cities, like Washington, D. C., attach the suffix N.E or N.W. to the street names to give one a sense of direction. The city is spotted with numerous open squares or circles from which a number of streets radiate In times of strife, if the city were beseiged, a squad of artillery stationed in one of the squares could have command of all the streets radiating from it.

While on the subject of division of the city according to the four points of the compass, mention should be made of the dividing streets. Division and Center Streets are admirable names for that purpose, as a logical association is conveyed to the mind.

Washington, Atlantic City, and a number of other American cities have named some of their thoroughfares after states. Unless there is some sort of logical order, such as an alphabetical sequence, the state names are of little value in conveying a sense of direction.

The custom of street group nomenclature is finding much favor in a number of the newer cities and subdivisions. It affords a vast field for expression, without destroying any of the local color that so many municipalities take pride in. The groups most commonly used are alphabetical letters like A. B, etc.; Greek letters, as Alpha, Beta; the names of colleges, as Yale, Cornell; the names of trees, as Elm, Maple; feminine names, biblical or not, as Esther, Mabel, Ellen; the names of the presidents of the United States and the various kinds of fruit. Towns rich in Indian history may have a group named after Indian tribes.

A common but often misused collection of names is the presidential group. I have never read of a city that has adopted the entire list. One will find Washington and Adams, then perhaps either Jefferson, Monroe, or Madison is omitted; Jackson is common, but Polk, Taylor, Fillmore, Pierce, Johnson, Hayes, and Arthur are rare. If this group is used, why not use it properly? "Washington" is, in many cities, a business street. Start from some street in the business section and work out toward the newer residential section, naming the presidential streets in chronological order. In the average city, twenty streets will bring one from the principal mercantile district to the city limits. The larger cities could use the entire list. Since the streets named after the recent presidents would be in the less-populated residential section, it will be possible to change street names every four years in order to keep the presidential group up to date.

An excellent method is a combination of the alphabetical and the group ideas. It permits of the opening of several new streets without disturbing the present names or spoiling the scheme of names. As an example, there may be A, Apple, Andrew and Astor Streets, followed by Beta, Berger and Billy Streets, and so forth. The new street in a locality bears the letter of the alphabetical group in which it is located. A stranger knows that "B" streets are in one section of the city and "R" streets are near the other end of the town.

To facilitate the movement of the mails, the city planners and municipal officials should prevent as far as possible a similarity of names. Handwriting has individual peculiarities, and it is generally the first idea conveyed that is used by the carrier. Maple and Mabel present a likeness that it is desirable to avoid.

From Alley to Boulevard

The words alley, lane, road, street, place, avenue, and boulevard should not be juggled indiscriminately. With the exception of places bearing the names of either streets or avenues, as described in a previous paragraph, the word following the name is the describing word and is an indication of the width of the street. An alley is the narrowest thoroughfare. "Road" may mean a narrow street or may be a descriptive word remaining from an old-time vocabulary, like the Boston Post Road, which is in reality a trunk-line highway connecting a number of cities. A "place" is a street generally not more than two squares or blocks long and joining two streets at right angles to it. Terraces are streets of higher elevation, sometimes paralleling and set back from a street below. Streets and avenues are the more common, and in most places, the avenue is generally the wider street. Residential sections of the city prefer the word "avenue," as it is often associated with the finer sections of real estate developments. Boulevards may be termed avenues of the better sort; they are very wide thoroughfares with sometimes a promenade and shade trees in the center. The word "Broadway," being an amalgamation of two distinct words, needs nothing further to describe it; a few western towns, however, use the name Broadway Street or Broadway Avenue.

There are additional names, like "The Place," Extension, and Concourse, that are purely local and are difficult to define.

Displaying the Street Signs

After a definite plan of naming the thoroughfares has been adopted, thought should be given to the proper display of the street signs. Some cities show an absence of standardization; on some corners the sign is fastened to poles; on others it is nailed to a corner building somewhere near the second-floor line. Of course, the ideal way would be to have the sign-posts on two diagonally opposite corners, but in lieu of this, a sign-post erected

at the far right-hand corner of a main thoroughfare would be sufficient. The name of the street should be in large, readable letters, and above it, in smaller letters, the name of the cross-street. If the curb line is illuminated at night, a cheap plan is to stencil the street name in black on a white background on the far right-hand corner of each street intersection. This scheme will be appreciated by the motorist, as it enables him to see the names of the cross-streets without any difficulty.

House-Numbering Plans

It is difficult when riding in a trolley car to estimate at what cross-street to get off in order to reach a number on a parallel street without much walking. A number of cities have adopted what is known as the 100-unit plan. Two base lines are drawn from which to start the house numbering—one north and south, the other east and west. Should the city be divided into quadrants of north, south, east, and west by two dividing streets, these streets are used as the base line. One number is allotted to each 20 (or whatever frontage is adopted) feet frontage.

A plan adopted by the city fathers of Jamaica, New York, which may be used by cities with numbered streets, is as follows: the number before the hyphen designates the nearest cross-street, and the number following the hyphen is the house number. Thus, 40-24 Tenth Street means that 24 Tenth Street is near 40th Avenue. It is very easy to follow, but this idea cannot be adopted by cities which have not numbered streets or avenues crossing at right angles.

Commencing from the base line, the houses have even numbers on the right and odd numbers on the left side of the street. The numbers in one square will start with 100; in the next square they are numbered from 200 until the next cross-street, where the 300 numbers begin. Unused numbers are dropped only at through cross-streets, not places or alleys. Now suppose the far corner of Washington and 5th Streets is number 501; then the far corner of Monroe (parallel to Washington) and 5th Streets, and every other street parallel to Washington, will be numbered 501 on the far corner of 5th Street. A person standing near 260 Columbus Avenue knows, according to this scheme, that he must walk seven squares in order to reach 960 Columbus Avenue.

In order to get uniformity in the placing of numbers on houses, several municipalities have passed ordinances that each house number shall not be less than 2½ inches in height and readily noticeable from the opposite side of the street. House owners should not be allowed to follow their own fancy in the placing of the house number, but should abide by a standard scheme; the numbers may be placed over the transom, on the second step of the house, or according to whatever plan is deemed practicable.

A Prize-Winning Design for a Municipal Building

PLAN AND PERSPECTIVE OF THE DESIGN FOR A MUNICIPAL BUILDING, SUITABLE FOR A CITY OF 100,000 TO 150,000 POPULATION, BY CLARENCE W. HUNT, FORT WAYNE, IND., WHICH WAS AWARDED THE LE BRUN TRAVELING SCHOLARSHIP FOR 1925. THIS ANNUAL COMPETITION, WHICH ENTITLES THE WINNER TO SIX MONTHS' TRAVEL IN EUROPE FOR THE PURPOSE OF STUDYING ARCHITECTURE, HAS BEEN ESTABLISHED BY PIERRE LE BRUN, AND IS CONDUCTED UNDER THE AUSPICES OF A COMMITTEE OF THE AMERICAN INSTITUTE OF ARCHITECTS

the letter of the alphabetical group in which corners, but in lieu of this, a sign-post erected

Aeration of Well Water at City of Martin, Tennessee

Soluble Iron Salts and Carbon Dioxide Removed by Spray Aerator Attached to Discharge of Deep-Well Turbine Pump

By J. P. Lawlor
Chief Engineer, Layne-Central Company

IN some localities deep-well water, otherwise good, is looked at askance because it contains soluble salts of iron, calcium, magnesium, and also carbon dioxide and a little hydrogen sulphide. The carbon dioxide content of surface waters averages 5 p.p.m., while when found in quantity in well water it will average 50 p.p.m. and frequently reaches a figure of 150 p.p.m. This is commonly called free carbonic acid. The iron in well water occurs as ferrous bicarbonate and ferrous hydrate. It has gone into solution principally by the solvent action of carbonic acid in the water on the iron minerals encountered in flowing through the earth, and will ordinarily vary from 0.1 p.p.m. to 8.0 p.p.m.

When the water is pumped into the mains without aeration, it develops a disagreeable reddish, muddy appearance often attributed entirely to iron coming from the well. This is probably not the exact case, for the iron content of the original well water is too minute to color a large volume of water in this manner. What does occur is this: The excess of carbon dioxide in the water, which is the active solvent for iron, attacks the iron pipes in the system, dissolving some of their iron as bicarbonate until the carbon dioxide is exhausted. The alkalinity in the water then begins to act on the ferrous salts, and the action is completed by slow oxidation and decomposition, which upsets the delicate balance and produces the marked red coloring seen in the water when drawn from the taps. This coloring comes from the pipes much more than from the well, and, while the result is the same, it is to be noted that carbon dioxide in the well water and the iron pipes are to blame for it more than the iron in the original water, although it, too, unquestionably contributes.

An excess of oxygen will remove the excess of carbonic acid and also the small amount of hydrogen sulphide frequently present. At the same time it will change the soluble ferrous salts to insoluble ferric compounds which will precipitate and settle out in the form of red rust. What is more important is the fact that

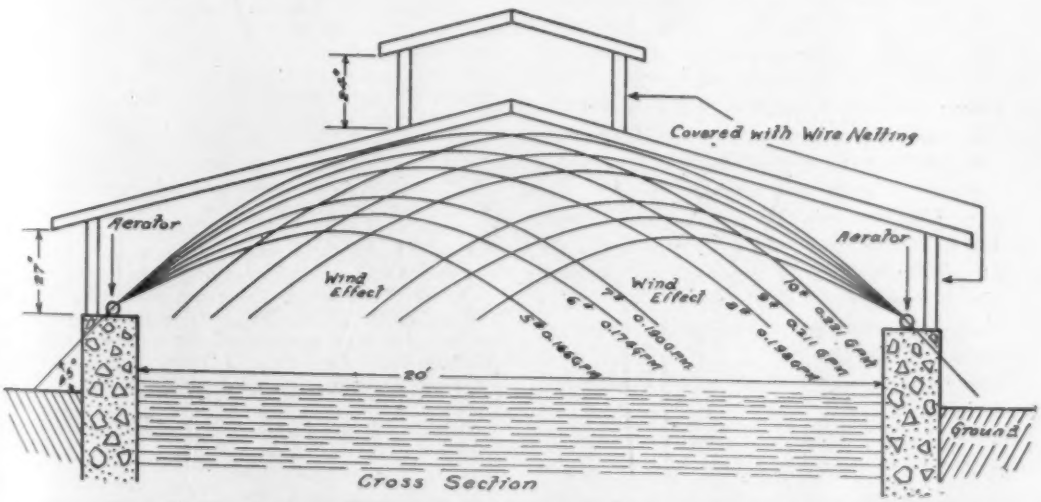


DIAGRAM SHOWING WATER JET CURVES AND GALLONS PER MINUTE OF WATER SPRAYED FROM 1/16-INCH HOLES SET AT 45 DEGREES ANGLE WITH THE HORIZONTAL

Approximately 2,100 3/32-inch holes set at 40 degrees with the horizontal were used at Martin, Tenn., to avoid too close contact with the roof over the aerator and reservoir

the carbonic acid is removed before it comes in contact with the iron water-main pipes or iron storage tanks, thus preventing excessive rusting in the water.

Water of this kind is either considered unsuitable for use or is pumped by air-lift. The reason for using the air-lift in this connection is that aeration removes the soluble iron salts and objectionable gases by incidentally supplying the air to accomplish the result.

That the same result can be accomplished at one-half the cost by pumping with a vertical centrifugal pump, discharging through a spray aerator, has been proved by engineers of the Layne & Bowler Company, at Martin, Tenn. For years this city pumped its water by air-lift, in order to obtain the aerating effect, at double what the cost would have been if a deep-well pump had been used.

A couple of years ago the city contemplated buying a new motor-driven compressor to replace the old steam-driven unit. A 60-h.p. motor was required to obtain 500 gallons per minute from the well. In view of the fact that a Layne turbine deep-well pump cost much less than the compressor and at the same time required but a 25-h.p. motor to pump the same quantity of water, the city decided to change over to the pump. It was first installed delivering water from the well directly into the mains. The water coming from the taps and hydrants at once assumed a reddish, muddy color, which did not appear when using the air-lift. The engineers devised a spray aerator connected to the pump discharge, over the old air-lift reservoir.

The reservoir is cylindrical and of concrete, having a roof covering it; all as shown in the vertical cross-section drawing. The inside diameter of the reservoir is 20 feet. The aerating device is located on top of the cylindrical wall and consists of a 4-inch diameter brass pipe bent to a circle of 21 feet inside diameter. The pump discharge enters the aerator pipe through two tees located diametrically opposite each other in the circle. A line of holes, drilled on the inside of the pipe circle, is located on an interior pipe radius having 40° elevation from the horizontal diameter of the pipe.

There are 2,100 of these holes, each 3/32-inch in diameter. The number required depends on, and is calculated from, the quantity of water to be aerated, the pressure at which it will be discharged, and the position of the roof covering the reservoir. The cross-section drawing shows the course or path of travel of two individual, small discharge streams from opposite sides of the aerator pipe circle under conditions of varying pressure. Each of the 2,100 streams points directly to the center, where it meets all the other streams. The perfect comminution and spray effect can be visualized readily. Actually, there is only an appearance of a dense, fine rain and mist falling in the space between the roof and the surface of the water in the reservoir. The aerating effect is superb, and the device accomplishing it, very simple.

A sampling and analysis of the water before and after aerating was made by the chemical department of Union University, Jackson, Tenn., under the supervision of Prof. A. W. Prince. The results are given below in tabulated form:

CHEMICAL ANALYSIS OF WATER, MARTIN, TENN.

Substances determined	Sample Number 1 Before Aeration	Sample Number 2 After Aeration
Total solids	55.00 p.p.m.	29.00 p.p.m.
Alkalinity (bicarbonate)	18.00 p.p.m.	20.00 p.p.m.
Free carbon dioxide	46.08 p.p.m.	12.00 p.p.m.
Iron (average)	0.65 p.p.m.	0.34 p.p.m.

The following explanation and comments appear in a report by the University on the results of the analysis:

"The non-aerated sample was taken from the pump at the top of the well, and the aerated sample from a near-by hydrant, after the water had passed through the aerator, reservoir, and the storage stand-pipe.

"The total solids shown by the analysis are made up largely of dissolved mineral salts together with a slight amount of minute suspended and organic matter. The bulk of the dissolved mineral salts are bicarbonate of iron, calcium and magnesium.

"Aeration changes the soluble iron, calcium and magnesium to insoluble forms which settle out. The suspended matter is decreased and the organic matter removed by the decomposing and oxidizing effects of aeration. A settling out of about half is obtained, although some of this is accounted for by the fact that the new salts are of less weight than the original. Relatively, the figures of 55 and 29 for the total solids check with those of 0.65 and 0.34 for the iron alone, showing that all the solids settle out in the same proportion.

"Judging by the results of the analysis made of the water before and after aerating, the effects produced by this aerating device at Martin, Tenn., are very beneficial, particularly in reducing the total solids, the iron and the free carbon dioxide. The slight increase in alkalinity is desirable and is due to the loss of carbon dioxide with a corresponding decrease in acidity."

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THE RESIDENTIAL STREET FEATURED IN THIS STREET-LIGHTING PROBLEM

A Variety of Solutions of a Residential Street-Lighting Problem---Part II

Valuable Contribution from Transactions of the Illuminating Engineering Society

AS a result of the great interest aroused and the benefits derived from the study of the thoroughfare-lighting problem which was presented by the Illuminating Engineering Society a year ago for solution, another problem was devised this year on residential street lighting.

A typical residence street in a city of over 100,000 population was chosen. A photograph of the street, reproduced herewith, was sent to each one of the selected list of engineers who were interested in the subject, together with a blue-print showing a plan of the street and giving information considered necessary for designing the lighting system. The questionnaire required that the engineers give the annual cost and illumination data in the form of an expenditure per running mile as an annual charge, including fixed charges on the equipment for the proper lighting of this residential street, as well as the amount of illumination which would be recommended for this street in the terminology considered most desirable. Because of complications involved in submitting a fair comparison of cost figures for various parts of the country, and also with a desire to limit the scope of the problem to the purely engineering aspect, it was decided to omit from the several solutions any direct reference to cost figures. The expenditure recommended in each case is shown, therefore, in per cent of the average of all estimates received.

The street to be lighted is one-half mile in length, and is in a city of over 100,000 inhabitants. The width of the street from property line to property line is 60 feet; from curb to curb, 30 feet. The pavement is sheet asphalt, the sidewalk is 5 feet in width, and the grass plot between the curb and the sidewalk is 10 feet. The trees on the street are as shown in the photograph with the foliage trimmed up to about 10 feet. The houses, which are of the better class, are located 35 feet back from the property line. There are wooden poles on the rear lot line a distance of 150 feet back from the curb, which carry the telephone wires, house lighting 115-volt distribution, and 2,300-volt, 3-phase primary feeders. The street carries the typical residence-street traffic, consisting of pleasure vehicles and delivery wagons. The street throughout presents the same general appearance as shown in the photograph, which was taken at the intersection of street B, looking toward street C. Street A is a thoroughfare; streets B, C, and D are residence streets. The choice of equipment and of the street-lighting distribution system is not limited to the types now in use in the city.

The second part of the problem was involved entirely with design, requiring a layout, a statement of the type and size of lamp, whether series incandescent, multiple incandescent, arc, or gas, the type of circuit, the arrangement of lamps, and the average distance between lamps measured along the center line of the street. Then followed a description of the fixture and post, and by such discussion and information as was considered necessary by the engineer presenting the solution.

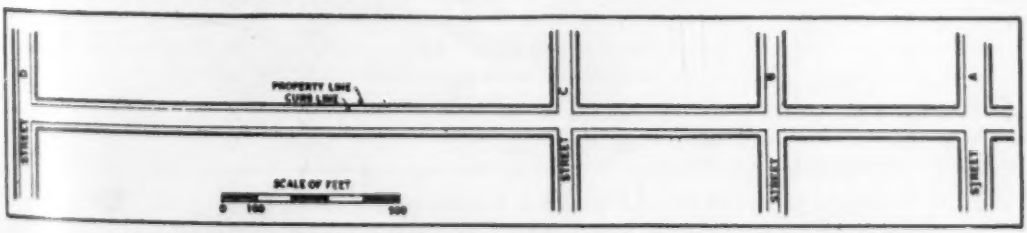


DIAGRAM OF STREET PORTRAYED ABOVE, WITH CROSS-STREETS INDICATED

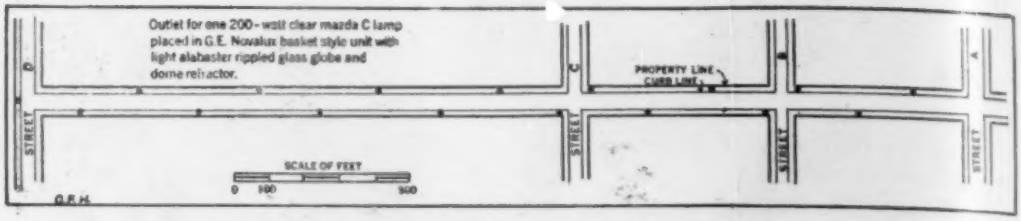


DIAGRAM TO ACCOMPANY O. F. HAAS' SOLUTION

O. F. HAAS

Illuminating Engineer, National Lamp Works, General Electric Company, Nela Park, Cleveland, Ohio

The expense of this solution is 74 per cent of the average of all competitors' estimates and provides 20 to 25 lumens per foot of street. The light source is multiple incandescent lamps, 200 watts, 115 volts, 3,250 lumens. The underground circuit is of the multiple type controlled by a single pilot wire with the grounded neutral of the 115-volt distribution system used as the return. The lamps are arranged on both sides of the street, staggered 155 feet apart. The fixture is a light alabaster rippled globe with dome refractor mounted on a tubular pressed steel or concrete standard with bracket at a height of 16 feet. The bracket is 4½ feet long, of circular or square steel tubing. The foliage limitations on this street are believed to be more severe than on average residential streets. Surveys have shown that on such average streets mounting heights of 13 feet with upright units and 16 feet with bracket units are satisfactory from the standpoint of foliage interference. With these mounting heights, the units are more out of the usual range of vision and also give a better distribution of light than where mounted lower. The advantages of the higher-mounted units are so marked that on this particular street it is recommended that the trees where necessary be trimmed and the units mounted 16 feet above the ground. The bracket construction has been recommended, as it has less foliage interference and higher mounting height than does the upright, and also by bringing the unit over the street it affords a more efficient utilization and desirable distribution of the light. A staggered system is recommended in order to light the pavement and sidewalk to the same level of illumination on both sides of the street and to avoid dense tree trunk and foliage shadows. The system recommended utilizes the house lighting distribution system and therefore avoids duplication of major transforming and distributing equipment. The plan is to control street lamps with a pilot wire, utilizing the grounded neutral of the distribution system as a return. For feeding the lamps, lead-covered, single-conductor cable is recommended, carried down the rear lot line pole and brought underground along the side lot line of the curb. The lead sheath is to serve as the grounded neutral return.

ROBERT J. MALCOMSON

Street Lighting Engineer, Public Service Company of North Illinois, Chicago, Ill.

This system would cost 68 per cent of the average of all contributors' estimates and would give an average illumination of 1⅔ times full moonlight. The light source is series incandescent lamps of 2,500 lumens, 6.6 amperes. The underground circuit is to be of the series type with film cut-out. The lamps are arranged on both sides of the street, staggered and spaced 150 feet. The fixture is a glass-paneled lantern accommodating an asymmetrical refractor mounted on a concrete post of plain octagonal design approximately 13 feet over all, the light source being at a height of 15 feet.

A lantern type of lighting unit was selected

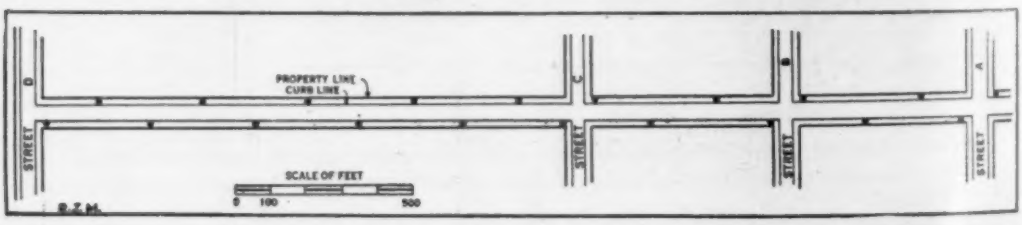


DIAGRAM TO ACCOMPANY R. J. MALCOMSON'S SOLUTION

for the luminaire on this residence street because it was considered that the lantern effectively blended with the general atmosphere of the street in the daytime as well as at night. A concrete post was chosen because it was thought that such a supporting post would give a more artistic appearance to the general lighting system. An asymmetric type of street-lighting refractor has been recommended for this street because of the very satisfactory results obtained on residence streets where this type of light distribution is now installed. The lighting system is designed as a series group installation, allowing for approximately 15 units in each group, and each group terminating at the secondary winding of a series group transformer. A 5,000-volt primary circuit terminating at constant-current regulators is used to energize the series group transformer. Capacity is allowed in each of the groups to permit the use of 400-candle-power lamps, should the finances of the city permit the use of this lamp intensity. It is the writer's opinion that the appearance of the street will be greatly improved by trimming the trees to a sufficient height so as to allow a 15-foot mounting height for the lamp unit. The ornamental street-lighting standards should be placed approximately 3½ feet from the curb line, and steel-taped parkway cable is recommended for the underground distribution system. The writer has experienced very satisfactory results obtained on typical residential streets on which the lamp units have been arranged and mounted as recommended in this report. Fifteen lumens per foot length of street should enable the motorist to drive safely with headlights dimmed, and the pedestrian to distinguish objects at a distance of 200 feet.

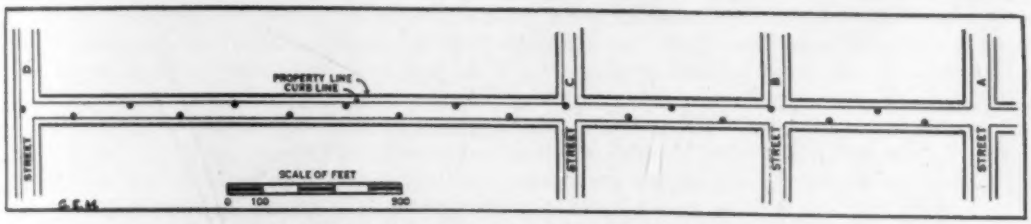


DIAGRAM TO ACCOMPANY G. E. MILLER'S SOLUTION

G. E. MILLER
Sales Manager, Cleveland Electric Illuminating Company, Cleveland, Ohio

The expense of this installation is 65 per cent of the average of all contributors' estimates and provides for 16.6 lumens per foot of street. The light source is a series incandescent lamp of 2,500 lumens 6.6 amperes. The series circuit is laid underground and has an insulating transformer. The lamps are arranged staggered on both sides of the street, spaced 150 feet apart. The fixtures are G. E. Form-25B with Holophane 8½-inch dome refractors and a G. E. No. 108 clear rippled globe. The standard is a Union Metal base with a tubular steel pole 19 feet high, with bracket attached to light center 16 feet above the ground line. The bracket is from Union Metal design No. 2223, a 6-foot straight pipe with scroll and supporting rod.

Clearance of foliage is obtained in most cases on this street by installing lighting units on 6-foot brackets which, with poles erected 2 feet back of the curb, extend the unit 4 feet over the pavement. On account of the high specularity and the low diffusing reflection of the sheet asphalt pavement, visibility along the pavement of this street is obtained mainly by silhouette. This is taken advantage of fully by mounting the units over the line of travel on both sides. Uniformity of lighting on sidewalks and curbs which give a diffused reflection is obtained by staggering. Undue glare is avoided by mounting the units 16 feet above the street level and by setting the refractor so as to give the highest candle-power emission at about 72 degrees above the vertical.

R. B. PATTERSON
Superintendent of Distribution Department, Potomac Electric Power Company, Washington, D. C.

The cost of this installation is 87 per cent of the average of all contributors' estimates and gives 22 lumens per foot of street and 55 at street crossings. The light source is a series incandescent lamp of 2,500 lumens, 6.6 amperes. The underground circuit is of the series type with film cut-out. The lamps are arranged on both sides of the street, staggered and spaced 130 feet. The standard is a metal goose-neck bracket 14 feet high.

Two circuits are designed for lighting the street shown, to insure against complete darkness of the street should trouble develop on one of the circuits, one circuit to each side of the street. These circuits should be operated

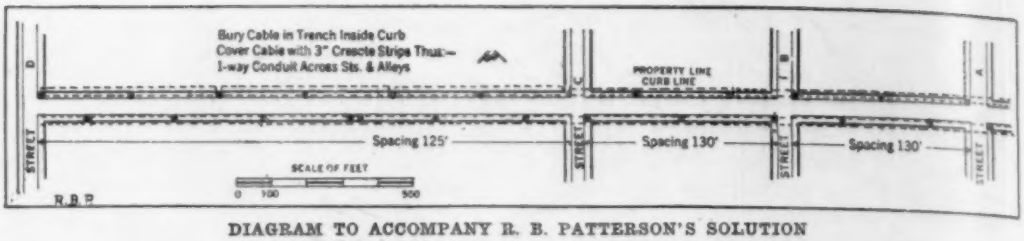


DIAGRAM TO ACCOMPANY R. B. PATTERSON'S SOLUTION

on separate constant-current transformers to give further protection against complete darkness of the street, should trouble develop in the transformer. The layout shows two legs of cable on each side of the street. However, this can be reduced to one leg of cable on each side of the street if a parallel street is to be lighted, making a return by the parallel street. This is not only less costly in construction, but makes it much simpler to locate cable trouble. If the return cannot be made by a parallel lighted street, then, of course, two legs of cable are necessary. It will be further noted that alternate lamps on the same side of the street are connected to the opposite leg of the cable, making every other lamp on the street on a different leg of the cable. This method insures quicker locating of trouble than normally required when trouble is on a long return leg of cable. While a series system is shown on the plan, local conditions have a considerable bearing on the type of circuit to be selected, such as proximity of substation to locality to be lighted if a series system is to be used, space for housing apparatus in the substation and duct space for return cables to the substation, whereas conditions may be such that the use of multiple circuits would prove more satisfactory and economical by the utilization of existing commercial and residential transformers for a source of supply.

T. W. ROLPH

Managing Engineer, Street Lighting Department, Holophane Glass Company, Inc., Newark, Ohio

This layout would cost 38 per cent of the average of all contributors' estimates. The light source is a series incandescent lamp of 4,000 lumens, 6.6 amperes, with an overhead series circuit with film cut-out. The lamps are arranged as a center span with a spacing of 253 feet. The fixture is a dust-tight, non-ornamental series fixture with a closed bottom refractor, either two-way or four-way, as indicated on the plans. The socket is set to give maximum candle-power 10 degrees below the horizontal. The standard is a straight wooden pole 25 feet high with a mast-arm bracket to bring the unit over the approximate center of the street, or a span wire may be used if preferred.

The street on which this problem is based is located in Newark, N. J., where the annual per capita expenditure for street lighting was 62.5 cents in 1923 and 70.6 cents in 1924. It is necessary to spend approximately $1.50 per capita in order to obtain essentially complete safety from crime and traffic accidents at night. There is no evidence that this city intends to increase its lighting expenditure to such a figure in the near future. Consequently, the lighting system on any residential street not a thoroughfare should be the most economical system that will provide adequate safety. This will be a non-ornamental system. It is admitted that a street of this kind ought to have ornamental lighting eventually, but it would be unjust to the rest of the city if the municipality should spend any money for ornamental effects on this street before raising the general standard of illumination to the point of providing adequate safety on all the streets. If the property owners on this street wish to pay for the additional cost of obtaining an ornamental effect, they should have that privilege. In this case there is no rea-

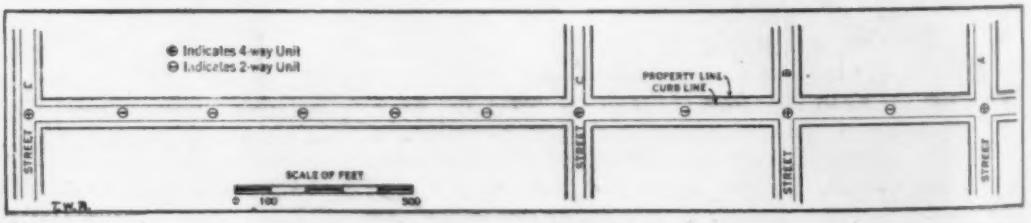


DIAGRAM TO ACCOMPANY T. W. ROLPH'S SOLUTION

son to think that they care to do so. Therefore, I recommend non-ornamental lighting, using efficient equipment and sufficient light to obtain essentially complete protection from crime and traffic accidents. Although Street D forms a three-way intersection with the street to be lighted, a four-way refractor is used. The extra beam is of no value, but is also ordinarily of no harm. If it should come at a point which is objectionable to some resident, it can be cut off by proper screening between two parts of the refractor. It is important that the fixtures be absolutely dust-tight. Such fixtures used with closed-bottom refractors prevent the accumulation of dust and bugs in the lamp and the inside of the refractor. Hence, cleaning is a simple matter, and dirt does not tend to accumulate readily because of the smooth, inward sloping outside surface of the glass. Dust-tight fixtures are rapidly coming into use and have proved successful in reducing maintenance costs and providing more light in service.

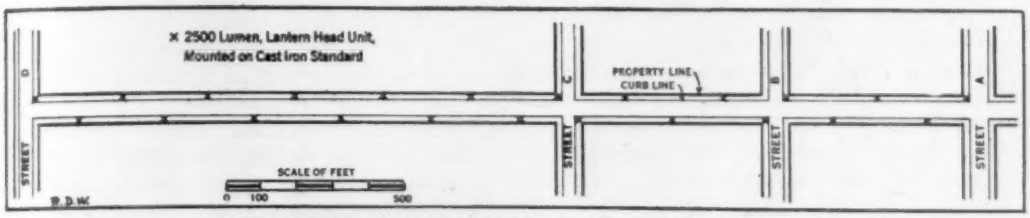


DIAGRAM TO ACCOMPANY RICH D. WHITNEY'S SOLUTION

RICH D. WHITNEY

Electrical and Illuminating Engineer, Crouse-Hinds Company, Syracuse, N. Y.

The layout suggested would cost 97 per cent of the average of all contributors' estimates and would provide an average illumination of 20 lumens per foot of street. The light source is a series incandescent lamp of 2,500 lumens, 6.6 amperes. The circuit which runs underground is a series circuit with film cut-outs. The lamps are arranged on both sides of the street staggered, and are spaced 115 feet apart. The fixture is a small ornamental lantern similar to G. E. Form 18 A with rippled glass panels and a prismatic dome refractor. The fixtures are to be mounted on ornamental cast iron posts at a height of 11 feet.

L. A. S. WOOD

Manager, Street Lighting Section, Westinghouse Electric and Manufacturing Company, South Bend, Ind.

The expense of this installation is 222 per cent of the average of all contributors' estimates, providing an average illumination of 50 lumens per foot of street. The light source is a series incandescent lamp of 4,000 lumens, 15 amperes. The underground circuit is of the series type with film cut-outs. The lamps are arranged on both sides of the street staggered, with an average distance of 80 feet between lamps, measured along the center line of the street. The fixture is an octagonal lantern with metal canopy, Syenite panels, Bi-lux refractor, and porcelain-enameled upper reflector. The standard is a Hollowspun reinforced concrete post with a mixed black granite and white marble finish and with a monolithic ground section, the standard being 13 feet high.

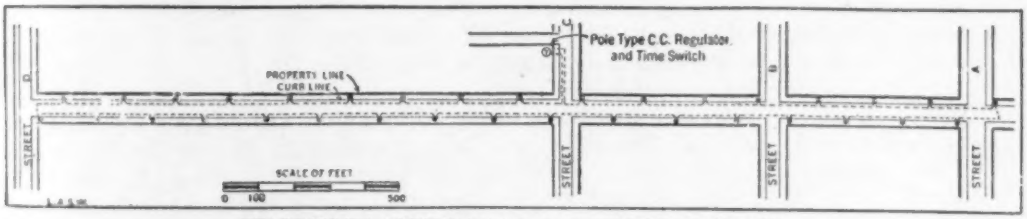


DIAGRAM TO ACCOMPANY L. A. S. WOOD'S SOLUTION

This solution recommends the use of concrete standards supporting octagonal lighting units at a height of 13 feet above the surface of the street. Mr. Wood recommends the use of a refractor for asymmetric distribution, the maximum output falling at approximately 17 degrees with the curb line. The foliage has the usual downward droop, so if a clearance of 10 feet is maintained at its lowest point, there is on the average fully 13 feet clearance when standards are placed on a line 18 inches back from the inner edge of the curb. When so located, the maximum

light output approximately parallels the canopy of foliage. The asymmetric distribution recommended, therefore, offers the most efficient means of preventing excess obstruction as well as providing a logical apportionment of light to suit the relative requirements of street, sidewalk, and yards. A moderate mounting height avoids the prevalence of long, dark shadows over residence fronts, yards, and sidewalks. These considerations lead to the conclusion that the solution herein presented provides the greatest measure of safety in relation to both street traffic and crime and at the same time possesses the ornamental characteristics desired for a first-class residential street. The octagonal lantern with hinged metal canopy is designed for a maximum of strength and accessibility with a minimum expense requirement in replacement and cleaning. The canopy provides a suitable housing and support for an upper reflector. The glass panels recommended afford sufficient diffused upward light to moderately illuminate the foliage, thereby avoiding the so-called tunnel effect. The series circuit of No. 6 rubber-insulated, lead-encased, steel-taped underground cable can be economically supplied from a 10-kilovolt-ampere pole type regulator and oil switch placed at any convenient point along the rear lot line. The oil switch may be controlled by a pilot circuit, a nearby street-lighting circuit, or a clock.

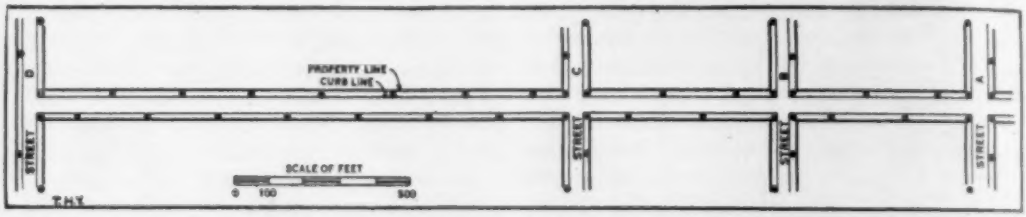


DIAGRAM TO ACCOMPANY T. H. YAWGER'S SOLUTION

T. H. YAWGER
Superintendent of Electrical Department, Rochester Gas and Electric Corporation, Rochester, N. Y.

This layout would cost 89 per cent of the average of all contributors' estimates and provides for an average illumination of 20 lumens per foot of street. The light source is a series incandescent lamp of 2,000 lumens, 7.5 amperes. The underground circuit is of the series type with film cut-outs. The lamps are arranged on both sides of the street, staggered and spaced 100 feet apart. The fixture is a General Electric Novalux Form 17 with frosted lamp. A 10-foot concrete standard is recommended with the light source 12 feet 6 inches from the ground.

The G. E. Form 17 globeless street-lighting unit was tried out as an experiment on one of the better-class residence streets of Rochester, and expressions of approval for appearance and light efficiency from citizens and city officials were of such character that additional units have been installed to the number of 1,000 on the better-class streets, with still further requests for extending this type of lighting. The fixture complete consists of a heart-shaped pipe support from the top of which is suspended the all-porcelain unit, glazed white underneath on the radial reflecting surface, and green above, where it is exposed to the weather. A removable iron top canopy gives easy access to internal binding posts in the porcelain insulator from which leads are run through the supports. At the bottom of the unit, the supports are joined to a heavy casting which fits a concrete standard with a 6-inch top and in which there is a covered handhole in order that the leads from the fixture may be attached to the line wire. The Form 17 unit, on account of its heavy porcelain insulator, is particularly suited for straight series lamps, but the type of diffusion employed limits the size of these lamps to 2,500 lumens and below. The unit cannot be equipped with an auto transformer for high-current lamps. The porcelain reflector distributes the light in such a way that most of it falls on the street surface, with little at higher angles. The characteristic of the globeless unit which recommends it very highly for the lighting of boulevards, parkways and residence districts is its very low maintenance cost, due to the accessibility of all parts and the absence of expensive globes which are easily broken in handling or by small boys with a predilection for showing their prowess as marksmen. This unit has very high efficiency because there is no glassware to absorb from 25 to 40 per cent of the light of the lamp, and a distribution which insures no upward light in the windows of residences, and insulation that will stand a 25,000-volt test. Novalux units have been particularly designed for use with Mazda lamps.

SUMMARY OF ESSENTIAL FEATURES OF ALL SOLUTIONS OF RESIDENTIAL STREET-LIGHTING PROBLEM

Contributor	Cost per Mile % of Average	Illumination Values	Size of Incandescent Lamps: Lumens	Size of Incandescent Lamps: Amp.	Arrangement of Lamps	Spacing Ft.	Fixture	Standard	Bracket	Mounting Height, Ft.	Distribution System
T. P. Brown	158	30–40 Lumens per foot	4,000	15	Staggered	120	Rippled alabaster globe and canopy. Dome refractor	Ornamental		11½	Series, underground. Insulating transformers.
James R. Cravath	49	13 Lumens per foot	2,500	6.6	One side	196	Ornamental, post-top, refractor type	Reinforced concrete		11	Series, underground. Film cut-outs.
W. T. Dempsey		19.3 Lumens per foot	200 watt 110 volt		Staggered	124	Copper casing, porcelain reflector, diffusing globe	Ornamental	9-Ft. ornamental	16	Multiple underground. Clock or remote control.
A. F. Dickerson	154	25 Lumens per foot	2,500	6.6	Staggered	100	Rippled alabaster globe and canopy	Ornamental iron, steel or concrete		12	Series underground. Insulating transformers.
O. F. Haas	74	20–25 Lumens per foot	3,250 lumens 200 watt, 115 volt		Staggered	155	Rippled alabaster globe. Dome refractor	Steel or concrete	4½ Ft. ornamental	16	Multiple underground, pilot wire control.
Robt. J. Malcomson	68	Ft.-c. Max. .07; Min. .03; Av. .05	2,500	6.6	Staggered	150	Ornamental lantern, asymmetric refractor	Concrete post		15	Series, underground. Film cut-outs.
G. E. Miller	65	16.6 Lumens per foot Ft.-c. Max.2.92; Min. .026; Av. .150	2,500	6.6	Staggered	150	Ornamental pendant. Dome refractor	Ornamental Tubular steel	6 Ft. pipe	16	Series, underground. Insulating transformer
R. B. Patterson	87	22 Lumens per foot 55 Lumens at street crossings	2,500	6.6	Staggered	130	Pendant, diffusing	Ornamental iron	Gooseneck	14	Series, underground. Film cut-outs.
T. W. Rolph	38	Ft.-c. Max. .20; Min..03; Av. .10	4,000	6.6	Center span	273	Non-ornamental. 4-way, 2-way Refractor	Wooden pole	Mast arm or span wire	25	Series, overhead. Film cut-outs.
R. D. Whitney	97	20+ Lumens per foot	2,500	6.6	Staggered	115	Ornamental lantern Dome refractor	Ornamental iron		11	Series, underground. Film cut-outs.
L. A. S. Wood	222	50 Lumens per foot Ft.-c. Max. .35; Min. .20; Av. .25	4,000	15	Staggered	80	Ornamental lantern, refractor	Reinforced concrete		13	Series, underground. Film cut-outs.
H. Yawger	89	20 Lumens per foot	2,000	7.5	Staggered	100	Ornamental reflector without globe; frosted lamp	Ornamental concrete		12½	Series, underground. Film cut-outs.

TYPE OF SEVEN-ROOM COTTAGE BUILT BY THE CHASE FAMILY HOME ASSOCIATION

An Interesting Experiment in Industrial Housing

MANCHESTER, N. H., is the scene of an interesting experiment in industrial housing. Since the war the city has been affected in a degree by the same conditions that have raised problems of housing in many New England communities, and the effort to meet these conditions which has been made during the last year by the Chase Family Home Association of Manchester has aroused considerable interest among students of civic affairs throughout the country.

Radicalism, especially among the foreign-born workers, has presented a serious aspect in the textile manufacturing cities. The immediate effect of this has been to discourage capital and make it uncertain of its investments. A more significant effect has been that many large cotton manufacturing plants, for this and other reasons, have moved their mills to southern sites, where a large supply of native non-radical labor is available. These removals have been made all the more attractive by the rapid industrial development of the Southern States during and since the World War. Water-power is available in many places where it had not been developed previously. Transportation facilities, the lack of which was one of the reasons why the cotton manufacturing industry was not established originally near the source of the raw material, now are adequate to the requirements of industry. In consequence of all these facts, many cotton manufacturers are finding it advantageous and profitable to move to Tennessee, the Carolinas, Alabama, or even Texas.

Real estate development in the New England textile centers, therefore, has been hesitant. The deterioration of old tenements and the accretions to population due to post-war shifts of population have created shortages of dwellings which business has been unwilling to supply during the period of unsettled economic conditions that has followed the war. In Cohoes, N. Y., this situation developed to such acuteness that the municipality itself now is developing homes for workers.*

Conditions similar to these, though less acute, were partly responsible for the organization of the Chase Family Home Association last year by Edward M. Chase, President of the E. M. Chase Company, and President and Treasurer of the Amoskeag Realty Company, of Manchester. But more personal motives are involved in the experiment.

"It is my firm belief that religion in the development of family life is essential to the preservation of our present national life and civilization," Mr. Chase said, "and on that belief I have caused this association to be organized to enable men who are members of

* See THE AMERICAN CITY for September, 1924, page 201.

religious organizations and their families to establish homes of their own, hoping that other organizations will be so established for the promotion of the same object."

Mr. Chase says that he has been thinking for twenty years about the disintegration of family life. One of the things that concerned him is "the discrimination that is exerted in renting a tenement or a house to a family with young children, a discrimination that unfortunately is still sanctioned by the state."

Radicalism and Home Environment

The question of radicalism Mr. Chase discussed in the following terms:

"We cannot expect that the children of the strangers to our shores will develop into desirable American citizens if they are reared in the most undesirable home environment. The natural outcome of abuse always expresses itself in the form of extreme radicalism. Unless we change our attitude and make a real effort to aid them constructively, we shall only add more fuel to the fire which has already assumed disturbing proportions. My sympathies are with the immigrant and with the man who is trying to raise a family in a religious atmosphere."

Impelled by these motives, Mr. Chase organized the Association and gave it outright, with no strings attached, its initial fund of $50,000. Articles of the corporation state: that it is established to build houses designed for one family only and to sell them without profit; that the board of trustees shall include, besides a treasurer who, if possible, is a president or treasurer of some national or savings bank, an attorney, a contractor, and others, including, whenever possible, a member of the Protestant faith, the Roman Catholic faith, and the Jewish faith; that houses shall be erected on lots not less than 100 by 50 feet and shall be entirely sanitary in construction; that they shall be sold only to persons with families of at least two children, who are members of some religious organization.

To prevent the use of the Association for speculative purposes, it was provided that houses should be sold only upon condition that they shall not be resold by the purchaser or his heirs within twenty years without giving the Association the first option to purchase at the original sale price. A plan was worked out whereby the houses were to be sold for actual cost on partial payments, the annual required payment not to exceed 12 per cent of the actual cost of the house and lot, this payment to include interest and other charges.

Results of the First Year's Work

This plan was set in operation in 1924. Recently, at the first anniversary meeting of the Association, its founder reported the results of the first year's work as follows:

"Concretely, we have constructed 30 new houses, which should aid materially in improving the housing situation in this city. In a larger sense, however, we have established a unique institution of 30 homes. We have selected 30 representative families and have afforded them the longed-for opportunity to rear themselves in an atmosphere free from poverty and wretchedness and have given them the chance to develop normal, wholesome, individual American family life."

Lots were selected in various parts of the city for the convenience of buyers. They were chosen also with consideration of proximity to schools and places of work and worship in order to save the family car-fare. The average size of lots was 52½ by 105 feet.

Plans for two-story, seven-room cottages were drawn by the Butterfield-Guertin Company, architects, of Manchester. Various contractors submitted estimates ranging from $4,248.33 to $5,016.55 as the cost of building each house. Since the board wished to build 30 homes for $100,000—half of which was provided by the founder's gift, the other half being derived from mortgages on the properties—it was found necessary to have the Association buy all the materials and to divide the labor among various contractors.

Two carpenter contractors, one mason contractor, one plumbing contractor, one painter, and one electrician were let their respective parts of the work on all the houses. As finally built, each dwelling cost $3,546.37 complete, except the grading and building of walks, which were left to the owners. The type of construction is described as follows by Mr. Chase in his report to members:

"We find that the finished house looks better than we had anticipated from the plans and specifications. The kitchen is finished in natural wood with a modern kitchen cabinet. There are set tubs, a lavatory, and a closet that leads off the kitchen. The dining-room is finished in walnut and has a built-in china cabinet. The living-room also is finished in walnut, and the vestibule has a built-in closet.

"On the second floor there are three good-sized bedrooms with plenty of closet-room, a sewing-room and a bathroom with modern equipment. There is a linen closet in the hall. All the rooms up-stairs are finished in white enamel. All floors, including closets

and vestibules, are covered with quarter-inch U. S. Government standard battleship linoleum, felt lined, cemented to the floor. All the walls and ceilings are made fire-proof and are insulated by the use of Sheet-rock wallboard and, while different types of decoration are applied on the walls, the ceilings are beautifully finished in stippled Tex-tone.

"We have spared no expense in buying electrical fixtures as modern as possible. We have used brass pipe for the cold as well as the hot water. The hot water boiler is all copper. The houses were turned over already piped to connect gas ranges."

Experience in Selling the Properties

The Association's experience in selling the properties is most interesting and will be of considerable value to students of industrial housing projects. About 1,200 applicants were interviewed. They were segregated into three classes: first, thrifty men with families of young children, with an average income of $20 a week (the average in the textile industry generally being from $20 to $22); second, men with incomes averaging between $28 and $35 a week; third, men with families of young children whose earnings average the same as those in the second class, who for some reason or another cannot provide more for their families than the men in the first class.

The 30 houses were sold to persons whom thorough investigation, including inspection of their previous homes, shows to be thrifty. The purchasing families included anywhere from two to eleven children each. Seventeen were of French descent, seven Irish; five of Protestant faith, one of Jewish faith. They were engaged in various trades. As an incentive to these new home owners, Mr. Chase has offered prizes of $10, $15, and $25 to the three families who maintain their lawns in the best condition.

In order to protect the Association and to provide for the widow in case of death, each purchaser was persuaded to insure himself in the sum of $3,000. The Association is the beneficiary for 10 years, the surplus remaining after the home is paid for reverting to the widow. The average cost of the insurance was found to be 49 cents a week.

Houses were sold at the rate of $7.50 a week. Of this sum $3.50 was absorbed by taxes, insurance, and interest on the mortgage for half the value of the property taken by the bank. No interest is charged on the money advanced by the Association. Deducting the $3.50 a week carrying charge, this rental leaves about $200 a year to apply on the purchase of the home.

"This means," Mr. Chase pointed out, "that we are selling each of these purchasers a house that we could easily rent for $12.50 a week, for $3.50 a week actual rent, besides the opportunity to become home-owners."

Roughly speaking, this payment plan makes it possible for the purchaser to acquire title within eight or nine years and to pay off the mortgage within fifteen years—an obligation no more protracted, certainly, than that involved in the majority of small-house real estate transactions in the subdivisions of most American cities.

Ten-Year Tax Exemption Proposed

The $7.50 weekly payment was determined on the basis supplied by statistics, that the family's rent should not exceed 25 per cent of its income. This makes it necessary to restrict sales to persons having wages of at least $30 a week. The Association is making efforts to have the State Legislature authorize the city to exempt these houses from taxation for ten years.

"Many city governments," Mr. Chase argues, "have found it good business to exempt industries from taxation for a period of from five to fifteen years, and I can see no better reason for so doing than for exempting the house of a man with a family of young children, as I consider the raising of a family in the proper environment the world's greatest industry."

If this exemption were obtained, it would be possible to sell the houses at the rate of $5.50 a week, $2.25 of which would represent carrying charges, and $3.25 payment on the principal. This would enable the Association to consider applicants whose average income is from $20 to $22 a week, which is the general average wage in the textile industry.

It was hoped to build additional houses at the rate of four a year, using the rental-income of the first 30 buildings as capital with which to finance the new construction. It was found necessary, however, to raise $7,000 more than had been estimated to pay for the construction of the first 30 dwellings. This was done by agreeing to turn over the net cash receipts of the first year to apply on the mortgage; so further construction is being held in abeyance this year. It is expected to build more homes as the funds of the Association and housing conditions in Manchester warrant.

The Staunton, Va., Water-Supply Project

By Willard F. Day

City Manager, Staunton

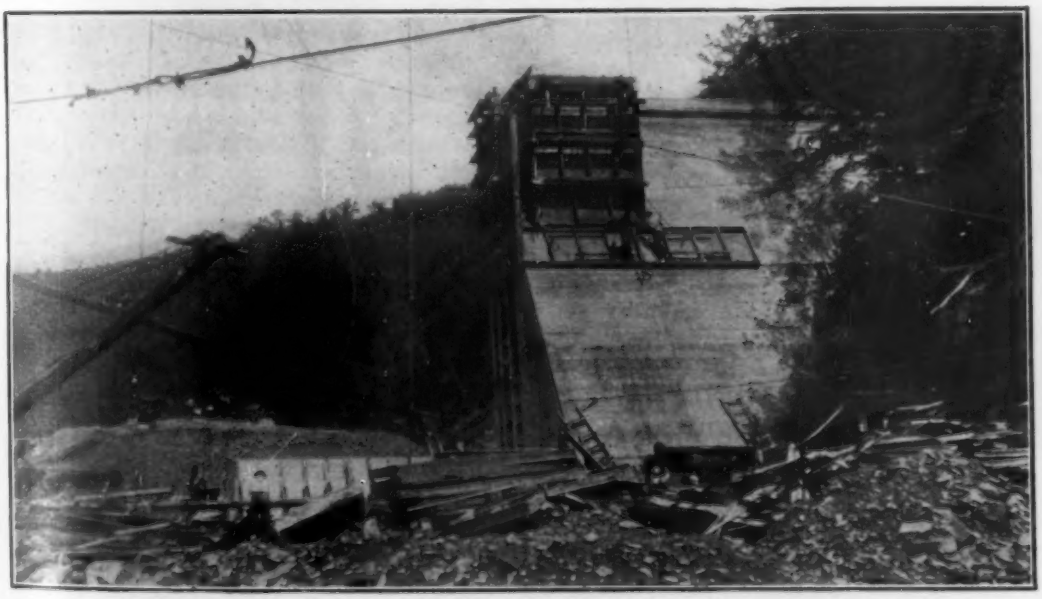
THE present water-supply of Staunton, Va., is derived from eleven springs located in Gypsy Hill Park, lying within the city limits. A steam-driven pump lifts the water to a distribution reservoir. This supply was developed in 1875, and produces a clear, odorless water of extreme hardness, with a distinct limestone taste. Flow from the springs has decreased until they are inadequate for the growing demand, pollution has become a menace, and the hardness of the water precludes rating it as "first-class," particularly for industrial use.

A thorough investigation for a new source of supply was made in 1923. The north fork of the Shenandoah River, or North River, from which water can be obtained by gravity, was shown to be the most logical, economical, and popular source for a future supply of soft water. North River is a typical mountain stream, lying in the Shenandoah Mountains, 15 miles distant to the northwest of Staunton. The watershed area is 25 square miles, all within the Shenandoah area of the National Forest, and therefore free from pollution.

At a suitable site a concrete dam, approximately 400 feet long, with an overflow spillway section 40 feet high, about 200 feet long, will impound 150 million gallons of water, submerging 35 acres. Test borings of the foundation, made by the Longyear Exploration Company, of Minneapolis, indicated a satisfactory foundation of sandstone, at depths ranging from 3 to 11 feet.

Coarse aggregate for the concrete is obtained by crushing the local sandstone, and fine aggregate is made by passing the crushed stone through rollers, which reduces it to a sand of the proper size and grading. The concrete is to be handled and poured by a 150-foot tower and chuting system. A stiff-leg derrick at the quarry places the plums in cars, which are brought within reach of a traveling derrick which places the plums in the forms.

Investigations of the development of the project showed that a tunnel 5,700 feet long through Lookout Mountain would reduce the length of pipe line 8 miles. The north, or entrance, portal was located close to the storage dam. The line of the tunnel is straight, the grade descending from the north to the south portal at the rate of 0.2 per cent. The completed tunnel will be 6 x 6 feet in cross-section, which size is determined by requirements of construction, rather than hydraulic consideration. If the bore proves



CONSTRUCTION VIEW OF THE STAUNTON, VA., DAM, LOOKING UP-STREAM

A DOWN-STREAM VIEW OF THE STAUNTON DAM FROM THE QUARRY

sufficiently tight, the tunnel itself will be put under pressure; if not, concrete pipe will be used for this section; in either case, ample capacity for future expansion of the system will be provided.

The work is being prosecuted from both north and south portals, simultaneously, both headings penetrating close-grained sandstone. Drilling and mucking operations are identical in both headings. Sixty per cent gelatin is used, the intensity of loading depending on the nature of the rock. A narrow-gage track is laid up to the breast of the headings, and the muck is removed in half-yard dump-cars, drawn by mules. One set-up of the drill column is made, from which all holes are drilled except the bottom holes. An average of 15 holes, from 4 to 6 feet in depth, are drilled for each round, and they remove an average of 4 feet per shot. Two blowers force fresh air into the advance workings through a 16-inch canvas vent tube, delivering 2,000 cubic feet of air at 3,000 feet from the tunnel portal. Work in the tunnel is carried on during 24 hours of the day, 6 days a week. Construction work was begun in October, 1924, and the contract time of completion for the dam and tunnel was 365 and 500 calendar days, respectively.

The total available head between intake at the dam and outflow at the reservoir in Staunton is 236.5 feet. After providing for aeration and possible filtration, and also head loss through the tunnel, there remains an allowable friction loss per thousand feet of pipe of 2.72 feet. A 16-inch pipe line, at the end of 30 years, will supply the 1955 estimated requirements of the city, or 2½ million gallons daily, with this friction loss. Flow in the pipe line is controlled only at the intake, since topographic features divide the line into sections, which can be drained by blow-offs. Direct outlet through a stand-pipe aerator prevents the possibility of static head. The pipe line is therefore designed for pressure from the hydraulic gradient.

The supply main is of 16-inch cast iron pipe with Leadite joints, 72,000 feet long, discharging through an aerator into a 3½-million-gallon concrete-lined reservoir with earth embankments. This reservoir is connected with the distribution system through the existing distribution reservoir, giving a total of 6 million gallons of storage capacity at the city.

The city purchased from the Lynchburg Foundry Company, of Lynchburg, Va., approximately 5,500 tons of 16-inch cast iron pipe, furnishing the pipe to the contractor, f.o.b. cars. A traction tread shovel, with half-yard dipper, excavates the trench, and averages about 500 feet per day. An average of 300 feet of pipe per day per gang is laid. The trench follows the contours without deep cuts or fills, the typical trench section calling for 4 feet depth and 3 feet width. Several streams are to be crossed. The pipe will, in such cases, be encased in concrete well below the bed of the stream.

Work on all features is well toward completion; the pipe line is installed, and the earth work at the new 3½-million-gallon reservoir has been finished. It is hoped to have the entire system in operation by July, 1926. The approximate total cost is $750,000, divided as follows:

Dam	$150,000
Tunnel	190,000
Pipe lines	360,000
Reservoir	50,000
Total	$750,000

The project was financed by the sale of $700,000 bonds of the serial type, bearing 5 per cent interest. These bonds, authorized by an election in February, 1924, resulting in a vote of over four to one in favor of issuance, were sold at a premium of $32,557 to Robert Garrett and Sons of Baltimore.

Fuller and McClintock, engineers, of New York, prepared the plans and specifications, and also have general supervision of construction. Lee H. Williamson is designing engineer and Charles H. Chandler resident engineer. Testing of the pipe and cement has been handled by Conard and Buzby, of Burlington, N. J. The contractor for the dam and tunnel is P. G. Ligon, of Baltimore, and for the pipe line, the Pace Construction Company of Roanoke. The Wilson Co., of Charlottesville, Va., has the contract for the reservoir.

Paving for Residence Streets—Part II

From a Memorandum Prepared by the Detroit Bureau of Governmental Research for the Mayor and the Commissioner of Public Works of Detroit at Their Request

Comparative Costs in Detroit

The pavements described herein, built in 1913, 1914, 1915, and 1916, reinforced concrete, cost on the pre-war basis from $2.00 to $2.60 per square yard. The vibrolithic pavement, not reinforced, but with granite wearing surface, and much denser than ordinary concrete cost, in 1923, $4.82 per square yard. On the basis of present-day labor and material costs, the reinforced concrete would cost from $4.00 to $4.50 or slightly more.

The cost of complete asphalt pavement has been decreasing through competition and taking advantage of the differential in favor of the oil asphalt. In 1923, the average price per square yard was $5.75. In 1924, the average price was $4.77 per square yard. In spite of the increased price of oil asphalt, the bid prices on asphalt pavement this spring have been well below $5.00. In fact, some prices have been essentially the same as the cost of the vibrolithic or even lower.

Un-reinforced concrete—of the best type—with machine-finished surface would now cost in Detroit from $2.50 to $3.00 per square yard.

Other Investigations

As the work enumerated heretofore, with the exception of the vibrolithic job, was done a decade or more ago, it was essential that work done later and showing the results of the progress made in the art of concreting be studied. Accordingly, I have visited recent work in Wayne County, including the cities of Springwells and Dearborn; Jackson, Battle Creek, Lansing, East Lansing, and Monroe, several intermediate villages and all of the highways between, and Windsor, Ont. None of these highways and streets have traffic comparable to the traffic that may develop on Detroit's streets, so the data accumulated in these cities and villages were augmented by a trip to Chicago, on which Commissioner Reid accompanied me. Inspection has been supplemented by discussions with engineers.

The net result is that there are two ways of building paving, that is, good and bad, and while the conclusions of Professor White are substantiated by reports of Professor W. K. Hatt, of Purdue University, and many other research engineers, the usefulness of concrete is not necessarily impaired, provided that the knowledge is kept in the forefront during the design of pavements, and that all the scientific data are applied in preparing, laying, and surfacing concrete roads.

In Chicago, Commissioner Reid and I visited new work as it was going in on Cicero Avenue and Diversey Boulevard, the former with a street-car line operating, and on the latter, provision being made for the construction of one. In other words, a strip about 13 feet wide was being laid from the curb. The proportions called for are richer than called for in Detroit specifications and the slab is laid 10 inches thick.

We were told that the work costs $4.68 per square yard plus $1.00 per cubic yard for excavation. In this work, approximately the lower half is placed using a gravel aggregate, while for the top half a crushed Wisconsin granite is the coarser aggregate. On the

basis of Detroit prices the added strength and the granite would not account for the price paid, i.e., $4.68.

Most of the work done in Chicago is a better class of work than laid by average contractors. Out in the state (Michigan) there is a great deal of work that is quite as unsatisfactory as that done in Detroit ten years ago. In Chicago, the stronger mix and the excessive depth indicate that permanence is sought. On Sheridan Drive, for instance, parts of which were laid over a winter fill, the depth is 12 inches, and heavy reinforcement was used. The heaviest traffic is the motor-bus, of which there are many, though the traffic otherwise is typical boulevard traffic.

In all of this concrete, care was taken in selecting aggregates that give more restful colors than those usual in plain concrete, and there is no glare. This obtains throughout the length of Sheridan Drive, which was later followed out as far as Winnetka. The surface of some of the streets other than the boulevards was considerably scarred by reason of laying the concrete after winter had started, we were told.

Parts of Sheridan Avenue were laid nine years ago, and most of it is 10 inches thick. In Rogers Park there is a stretch of very old pavement that is pretty rough, but it could be utilized as a base for an asphalt surface. In addition to Sheridan Drive, a great deal of the paving on side streets in these suburbs is being put in of one-course concrete with no thought of ever using any other surface.

While the entire length of Sheridan Avenue probably will not average quite as high as Lake Shore Drive through the Grosse Pointe communities, the entire drive of 18 miles has the same atmosphere. It does not follow that the residents of, for example, Buena Vista Avenue in Detroit would be satisfied were it decided by city officials to pave with concrete there rather than with asphalt. The argument as to the esthetics has very little foundation in fact.

Troubles with Old Pavement

The transverse expansion joint is usual in concrete practice, and the longitudinal joint in the center of the roadway is generally adopted. The description of the old pavements in Detroit noted the almost universal appearance of cracks at the third points, in streets 30 feet or more in width. Doubtless the center longitudinal joint will obviate most of these cracks. It seemed to me that this occurred with such regularity that there must be a law that would limit the width of a slab, and I guessed that limit would be between 10 and 14 feet. Mr. Wallace of our own Street Bureau later called my attention to the matter, and in Chicago I mentioned it to one of the engineers of the Portland Cement Association, who states that tests are being carried on to determine that maximum, which he believes is somewhere between 9 and 13 feet. This of course will vary with the design of the slab.

Notwithstanding the criticism that has been directed at it, and much of it justly, concrete can be and is being used successfully as a medium for paving in one-course jobs. The fact that there have been failures in road building is no more a reason for its discontinuance than the fact that iron and street structures have failed is a reason for discrediting their use entirely. In the design of iron and steel structures where life and property are at stake in case of failure, a factor of safety of four, and often higher, is used.

In the design of concrete the testing and experimental laboratories have prepared tables of proportions of cement, sand and gravel of given sizes, which if clean and mixed thoroughly with a fixed amount of clean water, will produce a concrete of, say, 2,000 pounds per square inch crushing strength. Probably because a failure need not necessarily jeopardize life, we have been content to follow on such a procedure where a slight deviation in any particular gives a much weaker concrete.

After deciding upon a given design for pavement, the engineer calculates his thickness, using certain unit breaking strength. It naturally follows that beside all of the factors just mentioned, the full amount of concrete specified must be placed. Now, any slip in design, a slight deviation in cleanliness or proportioning, the size of aggregates, the time of mix, the amount of water, or the thickness may upset all the plans of the engineer and the failure be charged to concrete. The success or failure of a concrete pavement therefore is dependent on: design; the contractor, his organization, equipment and amenability; and inspection. These factors are important enough to warrant a brief discussion each.

Design

In general, design includes plans, specifications, and the contract. Up to quite recently, the design has been all toward uniform thickness rather than toward uniform strength. In Detroit the practice has been toward greater

thickness at the center than at the sides. Some engineers are now designing very successfully with heavy shoulders and thinner centers, with the longitudinal center joint.

As the strength of concrete has been proved to be a direct resultant of the "water ratio," that is, the proportion of water to the cement, and quite independent of the aggregate, except as to cleanliness, an effort is being made to regulate the "water ratio" in the specifications, allowing the contractor to work out the most economical content of aggregate. As the contractor has made his profit by excess aggregates and brought about greater workability by excess water, the placing of a definite limit on the amount of water that may be used is a very sane step, from the designers' standpoint. Experience in Detroit has shown that better results are possible by limiting the water and demanding a thorough mix—conducting slump tests, etc. As subsoil conditions affect the probable moisture content of concrete, it is obvious that the character of soil should affect the design.

Experimental work is gradually changing present practice, and the ultimate design is a matter of conjecture. We know, however, that with clean aggregates, a thorough mix, and as dry a mix as is workable, and with the full specified amount of concrete, with ample provision for expansion and contraction, we can get a dense and durable pavement. These factors require the best cooperation by the contractors' organization.

Contractors

The contractors who have organizations trained to perform work with attention to all the details are not always the low bidders. The observance of all the stipulations as to proportion of aggregates, water ratio, thoroughness of mix, and placing expansion joints does not guarantee a smooth riding surface, which is the first test of the success of construction. The finish of a roadway that is free of waves or bumps is the result of long training and the development of a technique. With the best of intentions and the greatest of cooperation from the contractors, the engineer cannot always get those results.

If the contractor is not thoroughly experienced in this type of construction, though anxious to please, the work of the inspector and engineers is increased, and if the contractor is a bit "hard boiled," the success or failure of the pavement is put squarely up to the inspector.

Inspection

Inspection is a function of the engineer. Much of the effort of the engineer of the Detroit Bureau of Governmental Research in the past five years has been devoted to endeavors to suggest methods for improving the inspection service to the city. Progress has been made; more is possible. Despite the care of the paving engineer in designing, preparing specifications and drawing up contracts, the success or failure of the work is dependent directly on the intelligence, probity, courage, and dependability of the inspector. The Bureau's Engineer has endeavored to show that a very much higher type of individual is necessary for that work. It is impossible to attract men of the requisite qualifications for the salaries paid. Economy must be served, but it is not economy to save $100,000 in personal service and allow several million dollars' worth of work to be jeopardized.

It is a fact that the importance of the inspection has never been thoroughly appreciated. The reorganization of the inspection forces has shown by the results that we are on the right track and we are making progress in this direction.

Practical Considerations

Detroit has committed itself quite wholeheartedly to the asphalt pavement and, at present prices, it is not believed that any one would or could say in all honesty that he would prefer a concrete pavement. As far as the practice and usage of other communities is concerned, there is nothing inherent in concrete itself that should debar it from consideration as a paving medium, and under proper conditions there is much to recommend it.

Difficulty has been experienced in getting bids on concrete base alone, sufficient to turn over to the new asphalt plant. The city is not in shape now so that it can consistently bid on concrete base itself.

In the general reorganization plan, it was planned that the Division of Street Construction would be so manned and equipped that the city might be quite independent of contractors. It is hoped that the reorganization may be developed during the summer to such an extent that it may undertake such work with its own forces and with the utmost confidence in the results. At the present time, this is out of the question. As has been said repeatedly in Bureau memoranda to the Commissioners of Public Works, the city itself should do work of such a high character that

it may be the standard demanded of contractors. The Commissioners have striven to this end, but under the restrictions imposed by charter and custom, progress is exceedingly slow. To indicate the hazards of going into this type of construction with city forces, attention is called to the reports of the Inspection Bureau covering tests on concrete laid by all those doing paving work.

Asphalt contractors naturally desire to do asphalt construction. It might be that were enough concrete paving offered, some of the general contractors might be willing to compete for the work, and it may be that an experimental pavement laid by city forces under proper direction and control would be valuable, not only to the public, but to the Division itself. The matter is one that should be studied carefully, and worked out as to detail, for it is possible that by slight modification of design, the necessity of resurfacing with asphalt may be obviated.

Recapitulation and Recommendations

1. One-course concrete is being used successfully in all sorts of traffic conditions as a so-called permanent pavement, and is giving a satisfactory riding surface, though not as uniformly smooth as asphalt.

2. To accomplish a satisfactory pavement, the design, materials, workmanship, and inspection must be of the best.

3. The cost of a single-course, un-reinforced concrete pavement should be somewhat less than that of a similar pavement with sheet asphalt surface.

4. Local conditions—the absence of contractors willing to bid, the lack of a city construction organization, and the city ownership of an asphalt plant—make the present use of concrete construction difficult.

5. The possible use of concrete paving, either as a finished product or contemplating a surface application of sheet asphalt after three to five years, is a matter of expediency to be determined only after careful consideration and preparation by the proper officials, the Commissioner of Public Works, the City Engineer, and the Superintendent of the Asphalt Plant.

Teaching Safety to School Children

"SAFETY First for Children," a reader for grades 4A-5B of city schools, by Benjamin Veit, District Superintendent of the New York City Public Schools, published, 1925, by Noble and Noble, 76 Fifth Avenue, New York, is an excellent example of the application of the case method to instruction in fire and accident prevention. The aim of the book is to show to school children what carelessness and ignorance may cost in life, health and happiness, and to offer practical suggestions and a visual appeal for greater safety in their play, work, and every-day activities. The book is an effective argument, too, for additional parks and playgrounds. To quote from the story of Billy and Bessy:

"There were no public parks or playgrounds where Billy and Bessy lived. The children had to play on the sidewalks at a time when there was not room enough to play there.

"Sidewalks are dangerous because the dust and dirt that cover them are unhealthy, and if you trip and fall, you may break some of the bones in your body on the pavement. This is why we must never push anyone because he may fall and hurt himself. The city should have many parks and playgrounds where the children can enjoy themselves without danger."

Superintendent Veit's book has been especially written to cover all the important points in the "Course of Study in Fire and Accident Prevention" recently adopted for use in the New York City public schools. This syllabus has "carefully considered nearly all that has been written on this subject and, to a large extent, has embodied the actual experience of teachers engaged in presenting the subject matter to pupils."

The conscientious use of such books in public schools throughout the United States will unquestionably result in helping to save the lives of many children and in preventing annual losses of millions of dollars by fire. Lessons thus taught to the children are sure to be carried home and emphasized for the benefit of the household.

Winter Road Maintenance in Northern New York

By Bertram E. Murray

County Superintendent of Highways, Warren County, New York

WARREN COUNTY is situated in the northeasterly portion of New York State and may be called the southern gateway of the Adirondack Mountains, a portion of its eastern boundary being Lake George, and its northerly boundary crossing the center of Schroon Lake. Its area is approximately 1,100 square miles, most of it hilly or mountainous country, with a population of 34,000, and having an assessed value of nearly forty million dollars. This county contains approximately 125 miles of paved highways, of which 40 miles is the International Highway from New York to Montreal.

The winter season is about five months long and the depth of snow varies with the location, the southern portion having an average yearly snowfall of 76 inches, while in the northern part 90 inches is the average, with the temperature frequently registering 20 to 25 degrees below zero. Out of 125 miles of improved highways, there is about 25 miles that is subject to heavy drifts. Five miles of this if once allowed to fill up would completely block traffic for the rest of the winter, in spite of any modern snow-plow yet invented.

Organization

For the removal of snow, Warren County is divided into eight routes, according to importance of highways; centers of population to be served; highways leading from railway stations and terminals; and time schedules maintained by bus lines and mail stages; each route not to contain more than thirty miles of highway.

The snow-plow assigned to each route is stationed at a point so located that when it has made its first one-way trip, it has opened a single-track highway connecting with the next route, and thus, in not to exceed ten hours after the first three inches of snow has fallen, the entire 125 miles of highways are opened for uninterrupted travel.

All foremen in charge of snow-plows have standing orders to start plows out as soon as three inches of snow has fallen, and plow continuously until, on the less important roads, the end of their route is reached, or until they are relieved by another crew if on the main trunk lines. In this way, no matter what the depth of snowfall may be, it is removed as fast as it comes and does not materially hinder traffic or slow up the operations of the snow-plows.

In case of trouble, breakdowns, etc., when a plow is disabled, word is sent to the plows on the adjacent routes, and they continue plowing until the route belonging to the crippled machine is cleared, or repairs have been made to the plow, so that it can continue work.

During the first storms of the season all roads are opened as wide as ditches, guard-rails, and property fences will permit, so that, as the snowfall increases, there will be plenty of room for the banks, and the roadway will not be narrowed to less width than the pavement, which is from 16 to 18 feet. All roads are plowed as close to the pavement as possible after each storm, as any amount of snow left soon forms ice and becomes rutty, and builds up in the center so that cars drag and have difficulty in getting in and out of the ruts. This does not eliminate horse-drawn vehicles; though the sleighing does not last as late in the spring as formerly, it is better and more dependable during January and February.

At the close of the winter season three years ago, as it was realized that snow-drifts were uncertain things, liable to block travel where least expected, all drifts were located on the ground and shown on a road map of the county. This gave the exact location; the size of the drift; the direction of the prevailing winds; the direction of the wind causing the drift; the name of owner of the land; the nature of the land; the cause of drifts; whether parallel roads could be plowed or not; how much snow-fence it was necessary to erect; and, not of least importance, the location of the nearest telephone. It was found that of about 25 miles of road, subject to drifts, 18 miles drifted only occasionally, when there were freak winds, etc., and that there was about 7 miles which was constantly drifting and blocking travel. It was possible to eliminate about 2 miles of these drifts by plowing parallel roads from 80 to 100 feet from the regular highway, in the direction of the prevailing winds. About 2½ miles of snow-fence was erected and proved successful, and this coming year, additional fence will be purchased. We do not expect any more serious trouble from drifting snow.

The success of any snow-removal program depends largely upon organization and equipment. Of the two, probably equipment is most essential. For a territory similar to Warren County, one centrally located storehouse stocked with a good supply of spare parts, and a machine shop equipped with tools for ordinary repairs and in charge of a competent mechanic, are necessary. Telephone connections with all points where snow-plows are stationed, and telephone booths on important junctions and on far ends of each route, should be installed.

Equipment

On the important main trunk lines, it is usually necessary to work the plows continuously until the roads are cleared, and this means a new crew at least every ten hours.

To do this requires high-speed trucks for transporting the men, the fuel and other supplies. Between storms the trucks are used for patrol duty; that includes keeping the ditches and culverts open, replacing broken guard-rails and snow-fence, observing actual road conditions, and thus performing the most important function of all—keeping headquarters informed as to the daily road conditions.

Nine snow-plows are used, of the following type: two 10-ton Caterpillar tractors with V-shaped plows; three 5-ton Caterpillar tractors with V-shaped plows; two 3-ton 4-wheel-drive trucks equipped with 10-foot scraper blades; and two 5-ton trucks equipped with 10-foot scraper blades. Two more units, a 5- and a 10-ton tractor plow, are needed to be held in reserve to use in case of breakdown or unusual snowfall.

Another important feature is an arrangement with the Weather Bureau for a daily forecast, including special warning of approaching storms. These forecasts are received at headquarters and relayed to each foreman in charge of snow-plows.

The cost of removing snow depends largely upon the weather conditions; the depth of snowfall, the temperature, and the amount of wind being the greatest factors.

Records of Last Three Winters

During the winter of 1922-23, with a snowfall of 106 inches, thirty miles of road was kept open for $86 per mile, including the purchase of blade plows but using Army trucks loaned by the Government. The cost, not including equipment, was $45 per mile.

In 1923-24, with a snowfall of 80 inches, 125 miles of road was kept open at a cost, including the purchase of two 5-ton tractor plows, of $130 per mile, while the cost, not including the purchase of this equipment, was $43 per mile.

During the winter of 1924-25, with a snowfall of 77 inches, the same 125 miles of road was kept open at a cost, including the purchase of a 10-ton tractor plow, a high-speed truck, and 2½ miles of snow-fence, of $158 per mile, while the cost, not including the purchase of fence and new equipment, was $58 per mile. This increase in cost over previous years was due to the fact that the tractor plows were kept in continuous operation until the roads were opened and cleaned to full width, thus saving nearly ten hours in time, but requiring ten-hour shifts of crew and requiring their transportation to and from headquarters.

There is no reason why, with a strong, flexible organization, proper equipment, with some held in reserve, and starting with the storms, at least the important trunk lines cannot be kept open the year around, without imposing a serious financial burden upon the localities. As ease of communication and uninterrupted transportation are the life of all communities, the time has come when it is absolutely essential for public interest and welfare that all our important trunk-line highways be kept open for motor vehicle travel 365 days each year.

ACKNOWLEDGMENT.—From a paper read before the Twelfth Annual Convention of the Canadian Good Roads Association.

Danger to High School Pupils of Competitive Athletics

AN emphatic warning against strenuous athletics, stressing particularly their danger to students of high school age, is expressed in an editorial article in a recent issue of *The Journal* of the American Medical Association.

"The craze of the day," says the writer, "is competitive athletics. Twenty years ago such sports were confined to colleges and universities, but now the disease has spread to the high schools, and therefore to undeveloped youth. The larger the boy, without regard to his age, the more the captain and the athletic trainer corral him for physical stunts and competitive strains. A boy who has grown rapidly to over-size may not have his heart developed to fit his bulk. Ordinary exercise, even if not competitive athletics, causes his heart to work all that it is well able to do, and hence competitive speed or endurance is absolutely inexcusable in his case."

The conclusion is drawn that all competitive athletics should be graded to the average endurance for the age of the boy.

Machinery versus Hand Labor in Pipe Laying

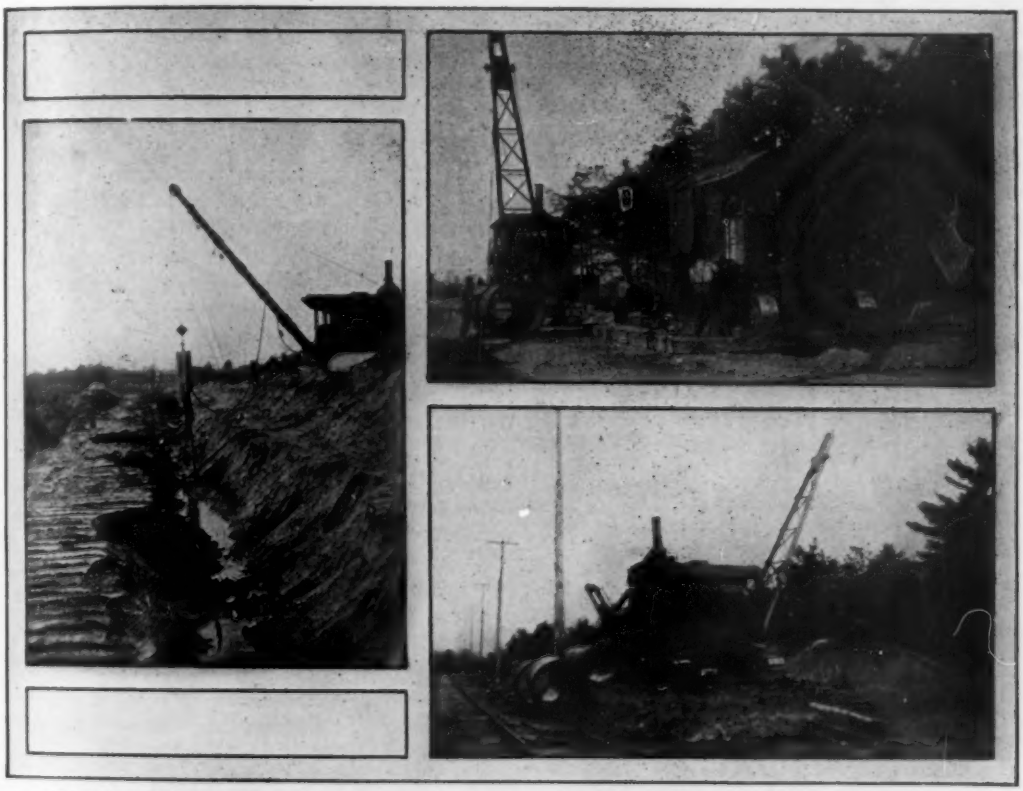
By Stephen H. Taylor
Superintendent, Water Department, New Bedford, Mass.

THE replacing of hand labor by machinery on the larger jobs is interesting as showing how much can be done by that method with a few men. In 1920 the New Bedford Water-Works contemplated laying 6,600 feet of 36-inch cast iron pipe, in addition to the ordinary annual extensions which are necessary to keep pace with new building operations constantly creeping out beyond the limits of existing mains. Labor at that time was very scarce, to say nothing of the excessively high wages demanded.

It was decided to purchase a 14-B Bucyrus steam shovel with an extended dipper arm and a special trenching dipper of ½-yard capacity, which permits the digging of a trench with perpendicular sides and sufficient depth. We afterward used a ⅝-yard dipper on the same machine with good results for the wider trenches.

The shovel travels over the trench on platforms made of 10 x 10-inch, or 12 x 12-inch green oak timbers made up in sections. These sections are long enough to give a good bearing about 6 or 7 feet wide on the sides of the trench. Three or four sections are used, and the shovel quickly picks up the section behind and places it ahead as the work progresses.

In 1921 work was started on a line of 48-inch cast iron pipe about 19,000 feet long. This work was located eight to eleven miles



TYPICAL CONSTRUCTION SCENE, SHOWING LAYING PIPE BY MACHINERY IN NEW BEDFORD
Top.—Bucyrus shovel digging from platforms straddling trench, Bucyrus crane seen in background. Below.—Crane equipped with clam-shell bucket excavating from alongside the trench on sections where the banks were too soft to carry the steam shovel over the trench. At left.—Crane with pile driver in use in marshy sections

from the center of the city, and the laborers had to be either boarded near the job or transported to and from the city each day.

In order to facilitate handling the pipe, which weighed 4 to 4½ tons each, a 14-B Bucyrus clam-shell and derrick, mounted on crawler traction, was purchased. With this outfit and gasoline-driven air-compressors for handling ledge and large boulders, and gasoline-driven pumps for handling water in wet trenches, the work was accomplished by a crew of from fifteen to twenty men and two or three trucks with dump bodies.

The shovel traveled over the trench on platforms, as previously described, depositing the excavated material in trucks which dumped it into the backfill close by. The derrick closely followed the shovel, thus keeping the haul by the truck at a minimum.

With the outfit described above and reasonably good earth conditions, from 120 to 180 feet of trenching, pipe laying, and backfilling per day was accomplished. The crew was so small that transportation to and from the job daily was an easy matter.

Some sections of the work were in sand, too soft to carry the steam shovel over the trench. Under that condition, the excavating was done by a clam-shell bucket on the derrick, alongside the trench. The banks were so slippery that it sometimes required quick work to get a pipe in the trench before the bank slid in.

The work, with the exception of a little filling-in of a low section which was completed early in the third season, was finished in two seasons, no work being done during the winter months.

All sorts of earth conditions were encountered—hard-pan with large boulders, quicksand, dry, sliding sand, and even swamp where pile driving was necessary. The same derrick with the 30-foot boom made an excellent pile driver.

The cost of the two jobs described was as follows:

COST OF 48-INCH MAIN LAID IN 1921, 1922, 1923
Class "B", "C", "D", N. E. W. W. A.
Pipe, $46.50 per ton, 18,813 feet. Specials $130 per ton.

	Total	Per Ft.
Pipe and specials	$326,096.04	$17.33
Gates, hydrants and checks	13,055.06	.69
Leadite and gasket	6,364.32	.34
*Tools	*29,173.31	*1.56
Labor (see subdivision)	93,705.33	4.98
Lumber	4,331.11	.24
Fuel, oil, grease, etc	7,295.01	.38
Consulting engineering	1,179.76	.06
Replacing road surface	8,929.56	.47
Miscellaneous expense:		
Traveling, telephone, telegraph, printing, accident, etc	5,535.30	.29
	$495,574.80	$26.34

—*Includes new tools purchased which are still in good condition, to the value of $18,940.05, or about $1.00 per ft.

Labor may be divided as follows:

	Total	Per Ft.
Excavating, laying, backfilling, grading, and watchman	84,598.48	4.50
Unloading and distributing pipe	6,906.52	.37
Tools	1,574.48	.08
Preliminary work	625.85	.03
	$93,705.33	$4.98

COST OF 36-INCH MAIN
Laid in 1920-21. 6,846 ft. Class "D", N. E. W. W. A.
Pipe $64 per ton. Specials $145 per ton.

	Total	Per Ft.
Pipe and specials	$121,191.85	$17.70
Hydrants and gates	6,052.25	.88
Leadite and gasket	1,441.85	.21
Labor	33,139.98	4.84
Fuel, oil, grease	330.34	.05
Lumber	502.90	.07
Miscellaneous	371.50	.06
	$163,030.76	$23.81

We have used the shovel on some of the smaller jobs in the city; but for short lines scattered in various sections of the city it does not pay, as the cost of moving long distances is excessive.

Another interesting feature of the laying of the 48-inch cast iron pipe was the laying of a curve of approximately 14° or 1,740-foot radius with straight pipe. It was pronounced by all who saw it a pretty piece of pipe laying, and was perfectly tight when the water was turned on. The curve was in swampy country and laid mostly above the surface of the swamp. It was well braced to prevent the joints from blowing out.

Practically all the joints on both the 36-inch and the 48-inch lines were made with Leadite and braided jute packing, which resulted in a great saving of labor, especially in wet trenches, where the digging and maintaining of larger bell holes would have entailed much more labor and expense.

As an illustration of the difference in the cost of joints made with lead and Leadite: two lead joints were made at a cost for packing, lead and labor of $18.06 each, whereas the same items for Leadite joints cost about $4.42 each. It took three men one hour and forty minutes to make a lead joint, whereas the same three men averaged from six to eight joints per hour with Leadite. This does not take into account the extra cost for bell holes when lead joints are made.

ACKNOWLEDGMENT.—From a paper read before the New England Water Works Association. Illustrations by courtesy of the author.

THE SEMI-ANNUAL INDEX

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will be found at the end of this issue.

Psychological Factors in Highway Safety

By Mary Louise Finney

Department of Philosophy and Psychology, Syracuse University

Attention Value of Colors, Contrast Effects, and Size

WE may introduce our discussion with the obvious statement that a sign depends for its usefulness upon its attention value. The question then arises, to what sort of things do we pay attention? Or more specifically, what type of sign is most apt to attract the attention of the driver of a car? Perhaps the most important of the fundamental facts of attention is that, other things being equal, an intense stimulus gets attention more quickly and more surely than a weak stimulus. Colors, contrast effects, and size are all varieties of intensity.

Yellow, the brightest of the spectral colors, has the greatest attention value of any single color and also the greatest carrying power — two facts which would urge its wider use both in signs and for signal lights. The adoption of yellow as the background of the danger and caution signs recently standardized by the Joint Board on Interstate Highways is an authoritative recognition of its effectiveness. Red, being the color of fire and of blood, has from the earliest times been associated with danger, and so is frequently used in posting dangerous points, danger lights usually being of this color. There are several disadvantages, however, in too extensive a use of red: (1) As the color for letters in a printed warning, it does not give the contrast effect with white which black does, and hence signs printed in red on white have less attention value than signs printed in black on white. (2) Since the usual form of color-blindness is for red and green and since about three per cent of men are color-blind, the use of red even in signal lights is inferior to yellow for a certain percentage of the drivers of cars. (3) What is really most important, the wide use of red as the color of tail lights has caused motorists to be less wary of the red light than they should be. This point will be further discussed in connection with errors of perception.

As to contrast effects, black and white involve the greatest brightness contrast; therefore, signs having black letters on a white background, particularly if the letters are large and there is much white space, have very good attention value. Contrast effects are also involved in the proper placing of signs—for example, a white sign should not be placed against the background of a white building.

The size of a sign is another important item in its attention value; signs should always be large enough to be seen at a distance of ten to twenty feet—what is more maddening than a direction sign so small or so weather-beaten as to necessitate stopping or even getting out of the car in order to decipher it?—but of course the nature of a sign should determine its size. Signs placed at particularly dangerous points should be six to eight feet square and should preferably have black letters on a white ground. The signs used by the New York State Highway Commission to post especially dangerous spots on the main state thoroughfares illustrate the value of size as a factor in attention. At a particularly dangerous dead end in Geneva, N. Y., where the state highway makes an abrupt right-angle turn, the straight course leading off a steep incline into Seneca Lake, a large sign ten feet square is erected, painted white with a black and white checkerboard border and the warning "Stop! End of Street!" in black letters two feet high, the sign being surmounted by a reflector of practically the same size and ren-

Highway Signs and the Driver

At least seventy-five per cent of all highway accidents are due to causes originating in the individual, such as his powers of attention and of perception, his visual limitations, his tendencies toward speeding and reckless driving, his loss of self-control in an emergency, his lack of experience in driving; a maximum of twenty-five per cent only can be traced to physical causes, such as poor roads, adverse weather conditions, or defective car mechanisms. Nevertheless, the psychological factors involved in accident prevention are usually completely ignored in formulating traffic regulations and devising highway signs. It is to a consideration of some of these personal factors in highway safety, particularly as they have to do with signs and signals, that this article is devoted.

THE REFLECTOR AND THE RED LIGHT SECURE ATTENTION AT NIGHT
Sign at dangerous dead end in Geneva, N. Y.

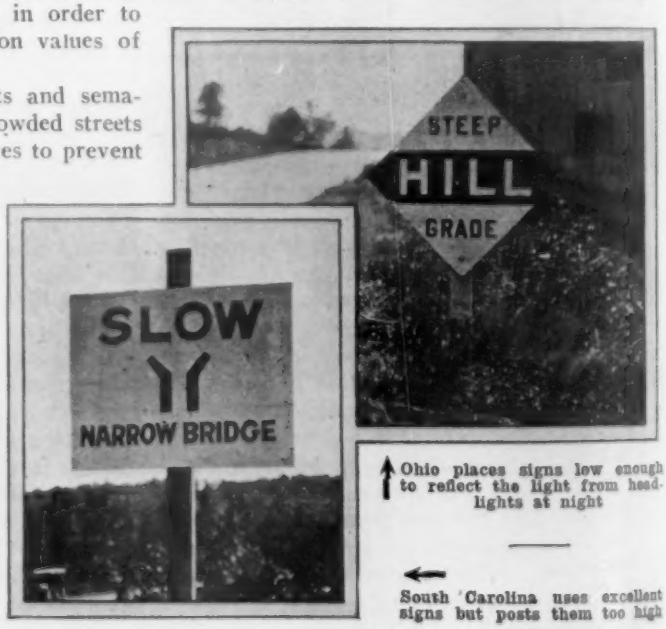
dered still more conspicuous at night by a red globe on the street light directly above it.

This brings us to the problem of insuring attention to danger signs in night driving, which, since a large proportion of open-road automobile accidents occur at night, is a matter of great importance. Obviously, a sign should either be well lighted or so placed as to reflect the light from the headlights of an approaching car; this means that signs should be placed either on the roadway itself or only slightly above it. The last few years have seen an enormous increase in the amount of pavement markings to indicate directions, etc.; and in general the practice is psychologically sound, though various points of special danger, such as bad curves, dead ends, railroad crossings, or steep grades should be indicated by some other means, in order to give them the additional attention values of contrast, novelty, and intensity.

The use of safety-island lights and semaphores in the center of traffic-crowded streets or at road intersections and curves to prevent collisions is widely prevalent and psychologically sound in general, though some modifications should probably be made. Unless we refuse licenses to color-blind persons, we should so modify our semaphores and signal lights as to render them effective for the driver with this defect. Since red is traditionally associated with danger and hence regularly means "Stop" in traffic signals, we should probably retain it; but a double system of lights could be installed, at very little additional expense, such that the light for the stop signal would be reflected through *two* red lenses while the go signal remained simply the *single* green light, or at least the lights could be reenforced by the printed commands, "Stop" and "Go," as is the case with some types of semaphore. A safety-island light which means simply "Slow" and not "Stop" should be yellow rather than red, in order to keep the red light for the really dangerous point which necessitates a full stop. Safety-island lights have greater attention value if they are intermittent than if they shine with a steady light, and an irregularly flashing light attracts attention more surely than one which changes rhythmically.

Perception the Comprehension of Meaning

In considering the relation of the facts of perception to highway signs and signals, we should remember that stimuli ordinarily arouse in the individual not sensations but perceptions, the perception being the individual's own interpretation of the meaning of what he sees or hears. It is, then, very evident that a simple and uniform symbol or wording is much more readily understood than a strange and unfamiliar combination of words, particularly if the combination is long and involved. The standardized sign warning of a railroad crossing is probably the most widely used of any highway sign throughout the country. It consists of a circular disk, usually white with black markings (the new ones to be used on Federal highways will be yellow with black),



↑ **Ohio places signs low enough to reflect the light from headlights at night**

← **South Carolina uses excellent signs but posts them too high**

THE ACME OF BREVITY

TOO MUCH ON ONE SIGN

At a 35-mile speed, which sign will the motorist be able to read completely?

with two heavy black lines crossing at right angles and dividing the disk into quadrants, the letters R R appearing in the upper half. This sign, since it is distinctive in shape, size, and lettering, is unmistakably clear in meaning and so is usually regarded by motorists. In securing clearness the effort should be made (1) to eliminate unnecessary words and symbols—verbosity in signs defeats it own purpose—and (2) to make signs denoting various dangers distinctive in themselves and also noticeably different from signs merely calling attention to traffic regulations.

This last recommendation deserves further comment: attempts to secure clearness may lead to over-standardization, by which a fundamental factor of attention, namely novelty, is sacrificed, as a series of signs uniform in size, shape, and coloring comes to be neglected even though the signs differ in wording, some indicating perhaps a dangerous curve and others only a restriction on parking. Standardization, then, for the best results, should extend only to the standardization of particular types of sign, each type being kept separate and distinct from other types by one or all of the factors of shape, size, or coloring, as well as in wording. In this connection, it is interesting to note that the standard signs recently adopted for use on interstate highways show not only variations in color, size, shape, and marking, but even differences in shape as well as in wording for varying degrees of danger.*

The factor of novelty is responsible for the various freak signs warning against speeding, such as "Drive slow and see our city—drive fast and see our jail" or "Too much speed—cemetery ahead!" These signs certainly do attract attention, as witness the fact that we remember them; but the effectiveness of any sign in discouraging speeding lies not only in its attention value but also in the reaction tendencies which it arouses in the individual. In these particular cases the humorous vein appealed to is more apt to be associated with reaction tendencies of recklessness and bravado than with the sterner tendencies in-

* See THE AMERICAN CITY for October, 1925, page 412.

CLEAR DIRECTION SIGN OF PROPER SIZE

STANDARD RAILROAD CROSSING SIGN

THE IMPORTANT WORD IS NOT THE CONSPICUOUS ONE

volving respect for law and consideration for the safety of others; hence, the simple sign "Speed limit 20 miles" is generally more effectual than any facetious comment.

The experimental work of various psychologists, Cattell, Erdmann, and Dodge among the first, has shown that perception in ordinary reading does not proceed by letters, but by words, and in some cases even by phrases and sentences. Hence signs which employ simplified spelling in their attempts at ease of reading do so in utter disregard of the known facts of perception. The "Slo" signs so frequently seen on the rear of cars are an illustration of this error; it takes much more time and effort to get the meaning from this unfamiliar word of three letters, since it must be perceived letter by letter, than it would to read the familiar "Slow" of four letters which is perceived as a unit.

The span of perception should always be considered in connection with the wording of signs, the chief argument for brevity being that usually in driving past a sign there is time for only a single perception or at most two perceptions to occur. The span of perception in reading varies with different individuals and with different material, but is ordinarily about five units, the size of the units depending upon the individual's familiarity with them. Familiar phrases, such as "Speed Limit," "No Parking," "Go Slow," are usually perceived as units, and hence take no longer than single words or even than single letters in the case of new and strange words. From these facts we may deduce the rule that highway signs, except in rare instances, should be limited to a maximum of five words and that these should be words in common use. Another principle of perception is concerned with the arrangement of the words in a sign, though attention is also involved in this matter: the most important word should customarily appear first, unless it is rendered conspicuous by variation in size or color of type and thus gets attention through novelty or intensity. As an example, signs indicating curves should preferably bear the legend "LEFT turn" or "RIGHT turn," rather than "TURN left" or "TURN right."

Accidents Resulting from "Response by Analogy"

Many of our perceptual responses are what may be called "responses by analogy," since we respond to a situation which is itself new but which is similar in many important respects to an old situation with the response which we found satisfactory in the case of the old situation. Although this is ordinarily a very useful habit, since it saves the learning of a new response for every new situation, it nevertheless sometimes gets us into difficulty, as when we note only the similar elements in a new situation and, disregarding the dissimilar elements entirely, make an incorrect response. A knowledge of the facts of "response by analogy" and the errors to which it may lead seems frequently to have been entirely lacking by our highway experts in designing and placing signs and signal lights. As an illustration of this type of error, we have the warning light marking a left turn placed too near the point of the curve and so appearing from a distance to be a safety-island light indicating the intersection of two highways; the ordinary response of keeping to the right upon seeing such a light of course leads to disaster, as it causes the motorist to drive his car either off the highway, or into the light if he discovers his error and attempts to rectify it.

The universal use of the red tail light on cars also leads to errors of the "response by analogy" type. Many good drivers like a straight road ahead of them, as they feel safer when not obliged to watch the rate of the car ahead and to adjust their speed accordingly, while of course to the speed maniac the car ahead is always a challenge to pass. Consequently, the usual response which both these classes of drivers make to a red light ahead of them on a country road is to "step on the gas," veering out to the side in order to pass the car. When, however, the red light is not

the tail light of a car ahead but a road excavation lantern or a railroad crossing gate light or a warning signal indicating that a bridge is out, this usual response only adds another to the huge volume of night accidents.

Danger signs which are similar in size, shape, or coloring to direction or regulation signs are often ineffective, since the motorist comes to disregard the danger sign just as he does the others. Something should certainly be done by highway commissions to eliminate from our roadsides the advertising sign which begins with an imperious "Stop!" and proceeds to advise us to "Use Hood's tires" or to "Eat at Dew Drop Inn 300 feet ahead." Having held up at such an official-looking sign several times only to discover its real nature, the motorist may come to regard every "Stop!" sign as merely "another advertisement" and so to drive heedlessly into real danger. Any use for other purposes of signs or signals which are similar in any marked degree to signs used to warn of actual danger should be rigorously eliminated, as it only invites disaster through the common tendency of quickly becoming indifferent to a sign which does not mean what it says.

Individual Differences

Lastly in our consideration of the human factors involved in highway safety, we should note some of the facts of individual variation, including both physiological and psychological differences. Of the physiological variations which may reduce highway safety, color-blindness and defects in visual acuity should of course be mentioned. But more important than either of these as a safety factor is the matter of reaction time in which individuals differ widely, these differences depending apparently on physiological differences in the structure and functioning of the individual's nervous system. The time that elapses after a danger is perceived until a driver can start the movement that is required to avoid it is frequently a very important factor in accident prevention, and long reaction times are doubtless the cause of many accidents.

Until we have some standardization of license requirements, we should aim to protect the public as much as possible against the motorist with defective or color-blind vision by making our signs large and easy to see and by reenforcing red and green lights either by a system of double and single lights or by printed commands as suggested earlier in this article, and against the driver with slow reaction time by placing danger warnings sufficiently in advance of the danger to allow him time to make a suitable response.

SUCH ROADSIDE SIGNS SHOULD BE ELIMINATED

The tendency of many individuals to become confused in crises or under distraction may be partially eliminated by restriction on parking, by prohibition of left-hand turns, and by an increase in the number of one-way streets, though all these means of reducing confusion may be regarded by certain individuals as unwarranted restrictions on their personal liberty. These and other mental differences argue, as do varying physiological characteristics, for standardization of tests which will not only measure physical capacity to drive a car, but will also give some indication of mental traits and moral qualities. Such tests, though difficult, are a possibility in the hands of the trained psychologist.

In conclusion, it should be remarked that the relation of the facts of individual variation to the designing and placing of highway signs is significant only indirectly through the intermediate step of standardizing tests for automobile operators. Certain standards or norms should be established for visual acuity, for reaction time, for ability to keep one's head in a crisis, and for all the rest of the physiological and psychological functions which enter into one's capacity to handle a car; and persons who do not, by actual test, meet these requirements should be refused drivers' licenses. Highway signs and traffic regulations should then be adjusted to these established norms. It will probably be a long time before we attain a system which even approximates such theoretical completeness, but at least the direction of our efforts is clear.

CALIFORNIA STAGE-LINE DEPOT AT SAN DIEGO

Solving the Bus Terminal Problem

By George J. MacMurray
News Editor, *Electric Railway Journal*

"IF we engage in the bus business to and from Boston, we shall not ask the privilege of occupying the city streets, adding to the already serious congestion. Instead, we shall plan to provide an adequate terminal off the street."

Gerrit Fort, Vice-President of the Boston & Maine Railroad, made these remarks. He was speaking on April 16 before Mayor James M. Curley of Boston at a hearing called to consider applications for bus permits. Mr. Fort's words were ominous, not ominous in the ordinary sense, but ominous in that they reflected a need that must be met. Streets are not terminals. This fact is generally recognized, but settlement of a problem does not always follow the recognition of the existence of that problem.

Los Angeles, Indianapolis, Portland, Ore., Minneapolis, Poughkeepsie, Rome, and Omaha all have good bus terminals—to mention just a few cities. No city not mentioned here need feel slighted at the omission of its name. The list is not intended to be complete. The important point is that terminals are absolutely essential. The details of the facilities to be included at the terminal are largely local problems. The size and character of the city and the extent of the bus movement out of the city all are determining factors with respect to what the terminals shall include.

In two cities at least, the bus terminal problem has been solved with the aid of the local Chamber of Commerce. These cities are Poughkeepsie and Rome, N. Y. At Poughkeepsie, a new building was put up as a terminal. It is operated by the Chamber of Commerce. That body and the bus owners share the expense of the rent. The proprietor of the restaurant maintains the terminal in return for the soda and candy concessions.

All the expenses of the Rome terminal are paid by the local Chamber of Commerce, which

Courtesy of The White Company, Cleveland

UNION MOTOR-STAGE TERMINAL, CLEVELAND

collects individual subscriptions from the city's merchants. A salary is paid to the terminal superintendent, but he supplements this salary with profits from concessions covering the sale of cigars, magazines, and newspapers. The terminal costs the bus operators nothing.

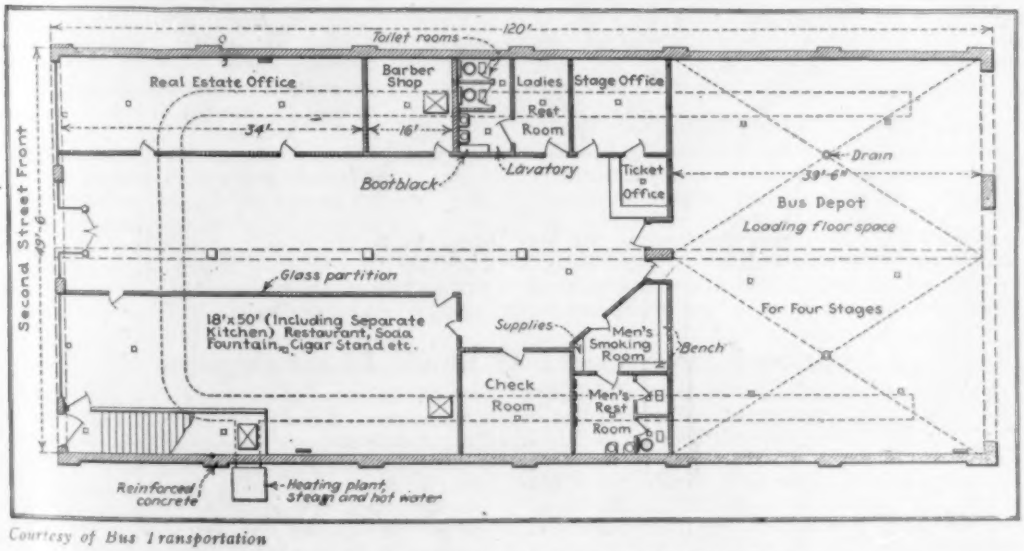
In Omaha, eighteen merchants underwrote the $200 a month rent of the terminal there, from which eight bus lines radiate. A somewhat similar arrangement is in vogue in Portland, Ore. There, local merchants and nearby hotels own stock in the terminal company, but the bus companies own a controlling interest in the stock. It is said that this terminal has proved so profitable that 10 per cent dividends are being paid, and that the terminal company is setting aside out of earnings a sinking fund to provide a new terminal.

Courtesy of Manufacturers Record

NEW INTERURBAN BUS TERMINAL AT KNOXVILLE, TENN.
This terminal, which is operated by a company, is 83 x 100 feet, with basement of same size for bus and auto storage. The roof is self-supporting and the front of the building is open from end to end. Twenty busses can be accommodated at one time. There is a fully equipped waiting-room, an information booth, and a restaurant. Most of the 150 cars operating in the city will use this terminal on account of an ordinance prohibiting the parking of busses on the city streets

In Providence the local electric railway has a terminal for the patrons of its busses. The independent bus operators also have a terminal. This arrangement is a bad one, but it is not the province of this brief review to try to fix the responsibility for this anomalous situation, distasteful as it must be to the patrons of both services.

On the other hand, J. H. Hambleton, Manager of the Hartford & Springfield Street Railway, has cooperated with the independent bus operators, with the result that both Hartford and Springfield have up-to-date terminals adequate to their needs, shared alike by the busses of the railway and those of the independents. In fact, the terminals were arranged on the basis of being made to pay from their inception. Best of all, both of these terminals take the busses off the streets. Passengers enter the vehicles direct from the terminal building. Mr. Hambleton said quite frankly that he realiz d the time would come when the city authorities would no longer permit the busses to be parked in the streets. In planning his terminals, he arranged to anticipate any move of this kind on the part of the local authorities.



Courtesy of Bus Transportation

FLOOR PLAN OF THE UNION STAGE DEPOT AT KELSO, WASH.
The income from this terminal more than covers rent, salary of depot manager, and cost of extra help, janitor service, light, and heat

Five Fundamentals

Each terminal is largely a law unto itself as to the facilities that shall be provided. It is equally as bad to have the terminal over-developed as it is to have it under-developed. It is impossible to lay down hard and fast rules that should be followed in planning a bus terminal. There are, however, a few fundamentals that should be remembered and observed:

1. Joint use of the terminal by all the lines entering the city should be arranged.
2. The terminal should be centrally located.
3. The terminal should, so far as it is possible, be provided; that is, it should be made
4. Provision should be made for possible future growth.
5. Berthing accommodations should, if possible, be provided; that is, it should be made possible for passengers to enter busses direct from the terminal without first going into the street.

These are merely outstanding points. It would seem, offhand, that the essential of a central location would be so obvious as not to need be stressed, but that is not a fact. Some terminals have been mistakenly located off the beaten path because of the proposed prohibitive cost of a site better suited than the one chosen. It must be borne in mind that ordinarily the more central and accessible a location, the better will be the rentals that can be collected from the concessionaires. Whether a local jeweler shall be asked to contribute free to the terminal a clock with his own name on it, the extent of the restaurant service, the compensation to be paid for concessions, and other similar matters are all details for local settlement.

Ingenuity will find a way around the bus terminal problem, and in considering that problem, the best results will be achieved if the local chamber of commerce, the local merchants, and the local bus operators all work together, not forgetting the local electric railway if there happens to be one and the management can be induced to participate. One thing is certain, it is hardly fair to expect the steam railroad and the electric railway gratuitously to furnish waiting-room accommodations for patrons of busses. As for the vehicle itself, a bus without a terminal is a vagrant on the street. It deserves a fate no less severe than does any other vagrant.

Municipalities Unite in Milk Control Work

THE effective consolidation of milk control work by health departments of municipalities with common sources of milk supply is possible under a plan adopted by The Milk Inspection Association of the Oranges, N. J. This is an organization of Boards of Health of five cities with a combined population of approximately 140,000. Its activities were outlined by William B. Palmer, Executive Officer of the Association, in an address delivered before the annual convention of the International Association of Dairy and Milk Inspectors, held in Indianapolis, October, 1925.

The Association is charged with full power for the supervision of the milk supplies, and is equipped with a laboratory, office, and staff to carry on the work. Funds are provided by assessments which are included in each of the Board of Health budgets. The advantages of uniformity in regulations and control have been well demonstrated, with results beneficial to the producers and dealers as well as the municipalities. Duplication of work and expense has been eliminated and the system has proved to be satisfactory from the standpoint of economy and efficiency.

Boards of health can do much to simplify the present chaotic conditions in the milk business, due to the many types of legislation, by adopting, as far as practicable, standard ordinances which have the approval of official organizations. Further advancement can be gained by the consolidation of small milk dealers. At the suggestion of Mr. Palmer, the dealers of The Oranges, N. J., incorporated and established a large pasteurizing and bottling plant and operate a creamery from which all their supply is secured. The present output of this concern is about 6,000 quarts daily. Through this plan the sources of supply are centralized, small, inefficient, and inadequately equipped bottling plants are eliminated, improvement in quality of products is secured through more effective control and the use of better equipment, and the enforcement of pasteurization is simplified by the volume of milk handled and the ability of the concern to install proper machinery and operate on an economical basis in competition with the big companies.

City and Town Clerks of Rhode Island Organize

AT a meeting in the State House, Providence, recently, an organization to be composed of city and town clerks of the state of Rhode Island was formed, with the object of furthering cooperation among these local officials and of promoting the adoption of uniform systems of accounting and reporting in the municipalities of the state.

The meeting was called by State Librarian Herbert O. Brigham at the request of a number of town clerks. After a general discussion as to the purposes and possible accomplishments of the suggested state body, the proposition was approved. A committee on by-laws and organization was appointed and asked to report at the next meeting to be held in December. City Clerk Lowndes A. Smith of Cranston was elected temporary secretary of the organization.

SCENE FROM HISTORICAL PAGEANT IN ELMIRA, N. Y.
Arrival of early settlers in Chemung Valley

Municipal Pageantry as a Means of Civic Education

By Martha B. Reynolds

THE dramatic instinct of the American people is not limited to the movies for its expression. Community and municipal pageants are being given in many cities. With outdoor stadiums, bowls, coliseums and shells, there is much opportunity for local color in the surrounding landscape. There is no recreation of the present day that contributes more to community pride, as well as to culture and education, than the producing of pageantry. The same spirit of local esteem that entered into the folk-dance festivals of early days and the Greek plays of Athens and Rome, finds expression in this modern form of community drama.

One of the foremost out-of-door plays of the last few years is the Wayfarer. This religious drama had its conception at the Methodist Centenary Celebration in 1919 in Columbus, Ohio. In 1920-21 it was produced in Seattle, Wash., under the supervision of the Associated Student Board of the University of Washington. It was underwritten financially by local business men, and each guarantor received back his principal with interest at 8 per cent, and a surplus was left in the treasury. Although the complete budget called for approximately $100,000, this was easily handled with an attendance of 138,000 persons for the six performances.

In 1923 this great spectacle was produced in Los Angeles. Montgomery Lynch was director and producer in both of these cities. The play was written by J. E. Crother. In Los Angeles the site was the Coliseum, at Exposition Park, which seated 43,000. A chorus of 4,000 voices, with a complete cast of 7,000 persons, was ready for the dress rehearsal within just two weeks from the time of enrollment. Thirty-five citizens, prominent in business, civic, and professional affairs, were the underwriters. Seven car-loads of scenery were required.

The episodes of this drama begin with a prologue called "The God of War," portraying a battle on Flanders Field. An inspiring story of hope and promise takes the listener through five episodes of history, from Babylon to the birth and crucifixion of Christ, and up to the Golden Age, in which a great illuminated cross draws all the nations of the earth.

Of a very different nature was the portrayal of the glorious romance of history, the pioneer pageant, "How the West Was Won." This production showed the enterprise of a community of less than 20,000 people, at Walla Walla, Wash., who were inspired by the sacrifice of "the pioneers who had dared, suffered, sacrificed, and won!"

Under the direction of Percy J. Burrell, on an immense pageant field with the natural background of the mountains, the thrilling scenes of early days were reenacted. The cast consisted of over 3,000 pioneers, soldiers and

THE COMMUNITY PAGEANT AT LOWELL, MASS., WAS BASED ON NEW ENGLAND HISTORY

Indians, besides the musicians. A crowd of 12,000 persons, many from miles away, and even train-loads from Seattle and Spokane, sat spellbound through the hours of the pageant. This spectacle included such scenes as the coming of the white man, led by the Indian maiden, Sacajawea; the wagon train of 1843; Indian councils and wars; the old Main Street in Walla Walla, and the arrival of the railroad in 1875, with the original engine. Finally, the chorus of 800 voices joined in the great Hallelujah Chorus. Dr. S. B. L. Penrose, President of Whitman College, is the author of this drama.

Cleveland, Ohio, told the city's story in its pageant-masque, "From 1706 to 1924—The Span of Time." Under the auspices of the city of Cleveland and the Federation of Women's Clubs, this was Cleveland's community celebration for July 4, 1924, marking the 128th anniversary of the founding of the city. It was estimated that a throng of 100,000 or even more enjoyed the dramatic spectacle at Wade Park. The occasion also demonstrated what can be done with city parks. A stage of 70 by 40 feet was used, with a cast of 1,000 people, a chorus of 1,000 voices, and Cleveland's Concert Band. These told the story for three hours.

This drama of industry and government was conceived and directed by Harper Garcia Smythe, with the main theme of the history of light, through the Egyptian, Colonial, and

SCENE FROM THE PAGEANT OF PROGRESS, SAPULPA, OKLA.,—5,000 PEOPLE PARTICIPATED IN THE PAGEANT

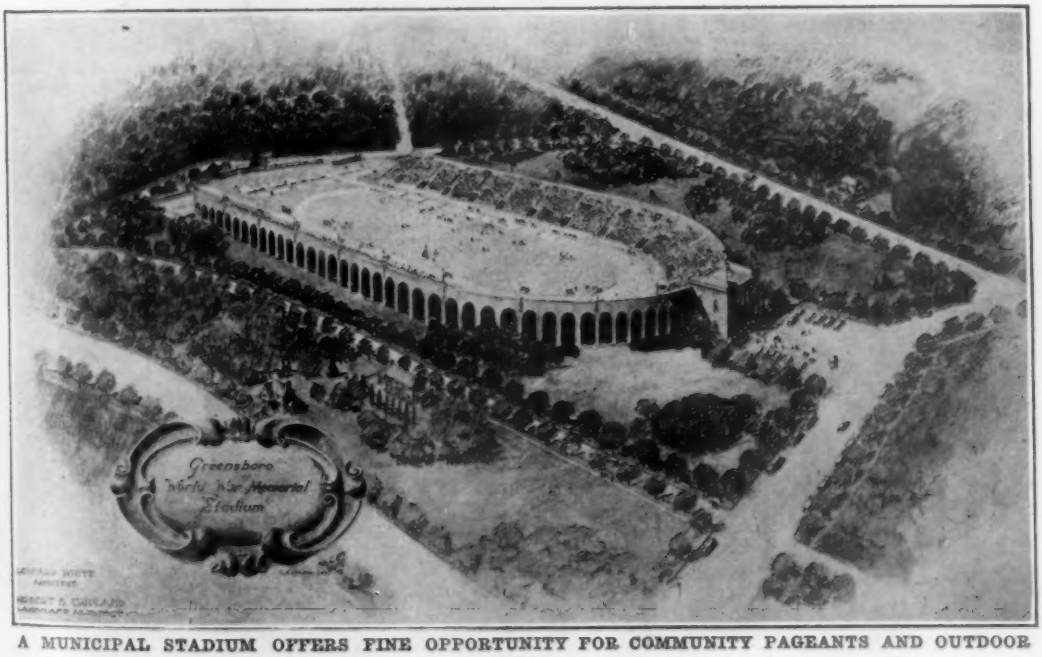
CORONATION OF THE QUEEN AT THE ROSE FESTIVAL IN PORTLAND, ORE.

Mazda periods. The local historical presentation centered around the arrival of General Cleveland, the covered wagon, and the Indian attack. The industries of Cleveland were symbolized, and an American flag in fireworks gave a brilliant conclusion.

Many other cities are awakening to the benefits of this form of entertainment and civic interest. Seattle has produced also a drama of American history, "Americanus." St. Louis presents every year open-air civic opera to audiences of thousands.

Boise, Idaho, featured the community drama, "The Light Upon the Mountain Tops," a pageant of progress, a history of the state. This was staged in the Boise Bowl, a natural theater in the foothills of the mountains.

The Pilgrimage Play, a mystery drama, portraying the life of Christ, has become the annual mecca for thousands. It is given in a



A MUNICIPAL STADIUM OFFERS FINE OPPORTUNITY FOR COMMUNITY PAGEANTS AND OUTDOOR OPERA

World War Memorial Stadium Planned for Greensboro, N. C.

canyon of the Hollywood hills, in California, with a stage setting of a five-acre mountainside. The management has been incorporated as a non-profit, non-sectarian, and non-commercialized enterprise.

Los Angeles has also become nationally known for its Bowl, where symphony concerts are held every summer, under the clear starlit skies. Grand opera, under local management, also has been given in this ideal setting.

At the yearly fiesta of Portland, Ore., famed as the "City of Roses," the central feature is the crowning of the Rose Queen. In a glorious park of stately firs, fronting on a glimmering lake, thousands of persons watch with enthusiasm the one maiden who is the choice of the city, as she arrives in her rose-entwined barge and ascends the throne, surrounded by her princesses and escorts.

ACKNOWLEDGMENT.—For the first three illustrations in this article THE AMERICAN CITY is indebted to the Playground and Recreation Association of America.

Forward Steps in Municipal Affairs

"Through" Streets Established; School Crossings Protected; School District Re-zoned for Safety

MINNEAPOLIS, MINN.—The increase of automobile traffic in American cities has made it desirable, both for the purpose of expediting traffic and for the purpose of providing efficient police regulation at a minimum cost, to resort to the designation by ordinance of "through" streets.

The through streets are generally important thoroughfares of the city which, on account of location, do actually carry the major portion of the street traffic, and the ordinance provides that all traffic on intersecting streets must come to a full stop before entering the through streets. The traffic on the through streets is thus given the right of way and can proceed in safety much more rapidly than on the unprotected thoroughfare. This has been found to be a great convenience to vehicular traffic, and has actually reduced the number of accidents and promoted more efficient and adequate police supervision. The only drawback experienced has been that the safety of the pedestrian is in some cases jeopardized. Particularly is this true as it relates to grade school children.

Before establishing a system of through streets in Minneapolis, a very careful study was made of pedestrian traffic and the relation of the through streets to school districts. Unfortunately, many of our school structures were erected before the advent of the automobile and the traffic problem, and as a consequence were placed either upon or near to principal avenues which since have become main thoroughfares, and have been designated as through streets. The writer took the position that the safety of the school children was of greater importance than speed of vehicular traffic and the convenience of the automobile driver; consequently, in recommending the ordinance and control system for the through streets there was included a recommendation that certain school crossings be protected by automatic "stop and go" signs, others by police officers, and some by temporary signs to be placed in the center of the school crossing during the hours of school traffic, to read "School—Stop." We have found that these signs, signals and manual control have been efficient and satisfactory, and that the drivers of vehicles, through courtesy as much as through compliance with the law, have almost without exception at-

SCHOOL CHILDREN IN MINNEAPOLIS ARE PROTECTED AT STREET CROSSINGS

tempted to do their part in the protection of the school children.

We have found, further, that in the existing plan of school districts and in the plan for additional schools, little attention has been given to the interference of major traffic streets. Cooperating with the Board of Education, both the present plan and the plan for expansion have been altered wherever possible so that school district lines will coincide with the major traffic streets, making it unnecessary for small children to cross these thoroughfares and doing away with the necessity of signs, signals, and other protective devices. A considerable number of school districts were such that their boundaries overlapped major thoroughfares only one or two blocks, and in these cases, where present and proposed school facilities permitted, the district lines have been changed. As the school construction program continues we will endeavor to make school district lines coincide with major streets as designated in the city plan, and thereby considerable economy will be effected.

A. C. GODWARD,
City Planning Engineer; Engineer Board of Estimate and Taxation.

An Ordinance for Sanitation in Public Eating and Drinking Places

SUMMIT, N. J.—Under the terms of an ordinance recently adopted by the Summit Board of Health, public eating and drinking places must clean and sterilize their dishes, cups, and spoons after each use, or must provide sterile utensils of paper or other material. The text of the ordinance follows:

Section 1. No person or corporation shall place, maintain or permit for use in any public place, public institution, or in any hotel, saloon, lodging-house, theater, factory, store, school or public hall, any drinking cup or glass, or eating or drinking utensils, to be used by the public generally, except as hereinafter provided.

Section 2. All vendors of ice cream, soda or other beverages, shall dispense such goods only in clean, sterile containers. Every such vendor shall have the place wherein such goods are dispensed, equipped with proper facilities for thoroughly cleansing the dippers, glasses, spoons, serving dishes and any other vessel or utensil which shall be used in the sale of any of the aforesaid articles.

Section 3. The minimum facilities for properly cleansing and sterilizing dippers, glasses, spoons, serving dishes and any other vessel or utensil used in the sale of such articles shall be as follows:

(a) An adequate supply of hot and cold water of a quality suitable for drinking purposes.

(b) Adequate arrangements for supplying boiling water, live steam or hot air, at a temperature of not less than 300 degrees Fahrenheit, to the receptacle in which the said utensils used in the serving and vending of said articles are to be cleansed and sterilized.

(c) A proper place for placing clean and sterile glasses, dippers, spoons, serving dishes, and any other vessel or utensil used in the serving and vending of said articles, after the same have been sterilized and cleansed, so as to keep them clean until needed for use.

(d) All spoons must be exposed to boiling water or live steam or hot air at not less than 300 degrees Fahrenheit for a period of not less than five minutes, after each use.

Section 4. All dishes and utensils, after each individual service, shall be first washed by rinsing in cold water, then washed in hot water with soap or other suitable cleansing powder, and then exposed to boiling water, live steam or hot air at a temperature of not less than 300 degrees Fahrenheit, for a period of five minutes, and then rinsed in clean, cold water, and drained.

Section 5. In lieu of other requirements in this ordinance set forth, sterile dishes, cups and spoons manufactured from paper, wood or other suitable material, may be used for one service only and then discarded.

Section 6. Any person violating any of the provisions of this ordinance shall, on conviction thereof, be fined not less than twenty-five dollars ($25) nor more than one hundred dollars ($100) for each and every offense.

MRS. THOMAS L. SMITH,
Member Board of Health.

City Hall Switchboard a Time-Saver

WEST PALM BEACH, FLA.—In view of the fact there are still many municipalities which have not followed the example of business houses by installing a telephone exchange board in the city hall, it may be of interest to city administrative departments elsewhere to know that West Palm Beach finds its recently installed city hall switchboard a decided advantage.

One of the principal considerations is that our citizens no longer have difficulty in locating the individual numbers of city departments. They simply have to call the city hall, and they are then put in touch with the proper official without unnecessary delay. In some cases the operator takes the message and sees that it is passed on to the proper department.

From the standpoint of the city officials, the board is a real time-saver, in that the operator can be asked to locate the person required while the official making the call may in the meantime proceed with his work. The board also makes it possible for several men located in various buildings to get together over the wire for a conference without leaving their desks.

While it would be difficult to calculate the exact amount of money saved by the city hall switchboard through reducing waste time in making calls, it is safe to say that it amounts to many times the cost of the board plus the operator's salary. A record covering three years in a city of 50,000 showed that an average of 185 outside calls and 70 on inside lines were handled daily at the city hall.

C. A. BINGHAM,
City Manager.

Playground Development in Fresno by Bond Issue, Gifts and Bequests

FRESNO, CALIF.—Aided by many substantial gifts from our citizens and by increased annual appropriations from the city, the work of the Playground and Recreation Department of Fresno has been steadily increasing for a number of years.

The movement to provide recreational facilities for our young people was started in 1910, when the people approved by a large majority the issuance of bonds for $60,000 to be expended for playground purposes. To further extend this work, a bequest of $10,000 from W. J. Dickey became available shortly after the bond election. Several tracts of land were purchased with the proceeds from the bond issue, and the donated funds were used for equipment. It was then that the city trustees decided to make an appropriation each year for recreational purposes and to establish the Playground and Recreation Department by ordinance.

Since that time our citizens have continued to show their belief in the value of playground work. In 1913, Mrs. Julia A. Fink-Smith donated a block of property to be used as a playground, and shortly thereafter increased her gift by providing play apparatus for the plot, and by erecting an

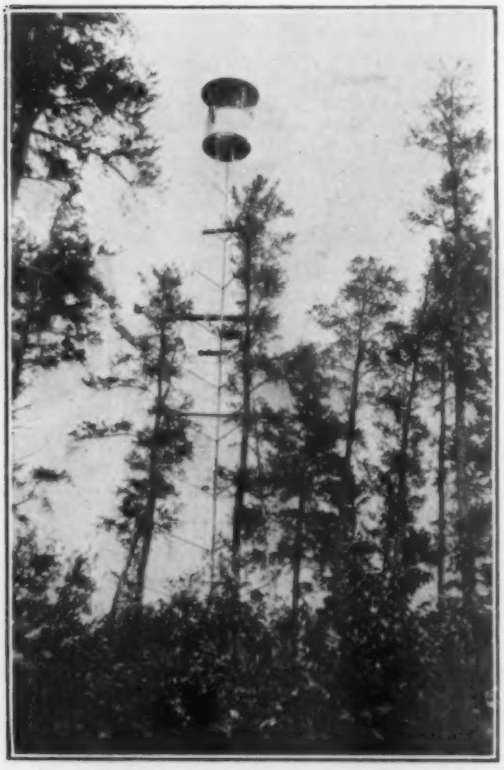
appropriate archway at its entrance. Four years later the Louis Einstein Estate donated to the city a playground completely fenced, and equipped with a club-house, a wading pool, apparatus, a concrete tennis court and other playground facilities. In 1919 another $10,000 became available for the work of our Playground and Recreation Department, upon the death of one of our prominent citizens, Frank Ball, and a few months later, Mrs. Augusta P. Fink-White donated a block adjacent to the Fink-Smith playground previously established by her sister.

The annual Raisin Day Festival, one of the many activities promoted by the Playground Department, has become so popular a celebration that it is now participated in by almost every institution in the city, as well as many valley and coast towns from San Francisco to Los Angeles.

RAYMOND L. QUIGLEY,
Superintendent of Playgrounds.

Airplane Patrol Has Limited Use in Forest Fire Protection in Northeastern Minnesota

DULUTH, MINN.—Several years ago, partly because of the impetus given aviation during and after the war and to the ever increasing uses for which the airplane is being developed, the airplane patrol was inaugurated to assist in the detection of forest fires in the region of northeastern Minnesota. At first, this method of fire detection was greeted with popular approval, not only by a public opinion ready to grasp any remedy for the continual threat of devastating conflagrations, but also by forestry officials anxious to increase the efficiency of their work. A longer trial and study of the effectiveness of airplane patrol resulted in more seasoned judgment than was possible during the excitement of its first use.



TYPE OF STEEL LOOKOUT TOWER USED FOR FIRE DETECTION IN NORTHEASTERN MINNESOTA

Minnesota forestry officials and others interested in fire detection and control now believe that airplane patrol for the northeastern Minnesota region is not practical, though they concede that it is practical and effective and even necessary in certain other forest regions. For instance, as explained by C. S. Lind, District Forest Ranger, whose headquarters are at Duluth, Minn., and whose district embraces a territory roughly from Duluth along the north shore of Lake Superior to the Canadian border and inland about 25 miles: "In certain of the very mountainous country of the West where the territory is isolated, uninhabited, and difficult of access for people as well as pack mules, where trails have not been established and settlers or other inhabitants are scattered 50 miles or more apart, the airplane patrol is necessary and useful. In such a territory, practically the only fire hazard is from lightning, but it is very important to detect and report the fire before it has had a chance to gain much headway."

Mr. Lind's views on forest fire prevention are interesting and sound. They are the result of years of practical experience and study, together with an intense zeal for his work. He believes that the greatest fire prevention measure is to educate the people who use and enjoy the forests, first, to a realization of their value, and, second, how to conduct themselves in the woods in order that fires will not be started. "Airplane patrols, lookout towers, expensive equipment, ground patrols, etc., are not as valuable fire prevention measures as is an educated public. This point is being stressed by forestry officials everywhere," says Mr. Lind.

Objections are held to airplane patrol in the northeastern Minnesota district on the following grounds: first, it is expensive—for the same funds more effective work could be done on the ground; second, no means have yet been devised to fight fires from airplane—therefore, it does not reduce the number of men required on the ground to fight fires; third, on account of smoke pall, it is often difficult and even impossible to detect fires; fourth, in this territory it is difficult to land and report, because of scarcity of suitable landing fields, unless hydroplanes that could land on lakes were used, and in this case reporting would be slow.

The airplane, however, has an important and distinctive part to play in any type of forest region, Mr. Lind believes. This is in taking panoramic and topographical photographs showing exact details of stands of timber, slopes of hills, watercourses, trails, etc., to be used in preparing for fire detection and fighting. For this work the airplane is invaluable.

STEEL LOOKOUT TOWERS PREFERRED

But for fire detection, Mr. Lind, as well as other state forestry officials, prefers the lookout tower. These towers are placed at high elevations. Fires are detected from one, two, or more towers, and can be located by cross-section observations. The location is reported immediately by telephone, and

fire fighters are then sent out and often arrive at the fire in time to extinguish it before it has a chance to run. The towers are ideal for determining exact locations. Reporting is quicker than by airplane. During the hazardous season, observers are in the towers all day. Detection is especially easy in the morning when the smoke rises upwards. At times and for short periods an observer's vision is limited, because of haze, but the same would hold true for airplane observations. Mr. Lind's district now has seven towers from which observations may be made. Five of these are wooden, and are not permanent. Two of the seven are permanent steel towers. With the construction of two more permanent steel towers, Mr. Lind will have enough towers to observe his entire forest district, approximately 100 miles long and 25 miles wide.

Mr. Lind has made an interesting observation as a result of the many arrests he or his men have made of people careless or negligent in causing fires: "Not one of these people belonged to an outdoor organization such as the Izaak Walton League, game protective bodies, and forestry associations. To me, that illustrates the value of education. Members of outdoor organizations have instilled in them the need of being careful in the forests. They appreciate the value of the forests, game, and watercourses. They realize that these can be preserved only by keeping out fires. It is their religion. We in the forest service hope that in time all people who use the forests will be careful. This can come only from education."

R. M. KERR,
Assistant Secretary, Taxpayers League of St. Louis County, Duluth, Minn.

MEMORIAL COMMUNITY BUILDING, AUDUBON, IOWA

Combined Memorial Hall, Municipal Building, and Fire Department Headquarters

AUDUBON, IOWA.—Since its completion several months ago, Audubon's memorial hall, constructed at a cost of $50,000, has become the real center of the activities of this farming community of 2,200 population, as well as providing adequate quarters for municipal offices and for the volunteer Fire Department.

The auditorium, on the first floor, has a seating capacity of 600, with accommodations for about 200 more in the balcony. This hall has been substantially built, in order to make it suitable for use by a unit of the Iowa National Guard, which also has offices, property rooms, and lockers in the building. Arrangements have been made with the state for renting the auditorium for the use of this company one evening each week. On the east side of the building on the same floor is a large room well fitted to take care of the equipment of the Fire Department, with a wide front entrance and driveway to the street.

The Council chamber and offices of the Mayor and Town Clerk are situated on the second floor; also quarters for the American Legion, occupying a space of approximately 25 by 62 feet across the front of the building. This room has been so arranged that a portion of it can be thrown open for use together with a small assembly hall directly back of it. In this way over 100 persons may be seated at one time, and many local organizations have made this room their regular meeting place.

The basement contains a dining-room large enough to seat 500 persons at one time, a kitchen, an assembly room, shower-baths, toilets, and a boiler-room. The building also contains a well-equipped rest room for women, and a club room for men.

P. A. RASMUSSEN,
Mayor.

Minneapolis Finds New Semaphores Satisfactory

MINNEAPOLIS, MINN.—After devoting about two years to a study of its traffic difficulties and experimenting in that time with various methods of solution, Minneapolis now has in operation a system of traffic signals that is successfully meeting the need of conditions here.

This city has a population of nearly 450,000, and, with a force of not more than 130 uniformed policemen on the streets at one time, it has been impossible to assign a sufficient number of officers to traffic duties. With no hope in sight of an increased police budget, and the citizens justly becoming more and more concerned over the growing accident totals, the obvious step was to adopt some mechanical means of increasing safety on the streets.

Representatives of the City Council and the Police Department proceeded to make a tour of other cities throughout the country to see how similar traffic problems were being met elsewhere. Upon their return, funds were raised or converted for trial installations of various types, and electrical devices of all kinds were examined. The first type chosen was the well-known style of semaphore mounted on a concrete base in the center of a street intersection, but local conditions made this impracticable. Traffic congestion was such that the bases were constantly broken by collisions, and repair bills mounted at an alarming rate. Another difficulty was that eighty per cent of our busiest intersections are crossed with street-car lines, so that there was not sufficient room in the center for posts.

ONE OF THE NEW SEMAPHORES IN USE IN MINNEAPOLIS

Then the "American Bobby" semaphore, manufactured in this city by the Griswold Safety Signal Company, was given a trial. It was found that it fitted well at street intersections, even between four car tracks, the signal being only seven inches wide. When struck by vehicles, as will happen occasionally, the signals merely bob back into their upright positions after the impact. Repair bills were usually small, often only the replacement of light bulbs being required.

There are now 36 "American Bobby" semaphores in operation in Minneapolis. Based on the estimated cost to the Police Department of supplying uniformed officers at these corners, even if only during the crowded hours of the day, the new installations are effecting a yearly saving of over $31,000. On twenty other corners, where a safety or warning light is necessary, upright signals of the same type as the new semaphore have been installed. These also are effectively reducing the probability of accident to our citizens, whether pedestrians or motorists.

W. C. WALSH,
Secretary, Safety Bureau, Minneapolis Civic and Commerce Association.

Progress Toward Reduction of Fire Insurance Rates

BEAUFORT, S. C.—This city is working hard toward a reduction of fire insurance rates by the Southeastern Underwriters. An important step in this progress has been the purchase of a new American-LaFrance Type 75 triple combination double chemical tank. The apparatus was delivered to us on December 11, 1924, and replaced a one-ton commercial truck which was equipped with a body carrying 250 feet of hose and a chemical tank. This truck has been in service for seven years. We did not dispose of it, but housed it in the back part of town, which is thickly populated with the colored citizens and is beyond our water-mains.

Our fire department is volunteer and has proved itself very efficient. Since the purchase of the new apparatus we have had regular fire-drills, and every member responds to every alarm. Six calls have been answered by the new apparatus, and through its aid and the efficient manner of the company's response to the calls, the fire loss has been very small.

HUNTER H. McGEE,
City Manager.

SOME OF THE CITY OFFICIALS OF BEAUFORT, S. C., AND THE NEW MOTOR FIRE APPARATUS

Standing, from left to right:
Charles Knott, Councilman
R. V. Bray, Mayor
Hunter K. McGee, City Manager
Lee Gill, Fireman
S. P. McDaniels, Councilman

Seated:
W. H. Olhandt, Fire Chief
C. C. Hagh, Driver

The Municipality at Christmas Time

Some Celebrations—Some Suggestions

MORE and more, our cities, towns, and villages are fostering a community consciousness—and one thing that has done much to strengthen the realization that every citizen has a part in the community duties and pleasures is the municipal Christmas tree. It belongs to all. All can share in the beauty and joy that it dispenses. Not always does it draw the crowds because of material gifts—sometimes, like the Tree of Light in Madison Square, New York, it presents only the untarnished gifts of light and song and fellowship. Again, where the need seems pressing, it becomes the center of the activities of a wise and generous Santa Claus. In any case, it draws the people together and banishes loneliness in the thought of service.

Beaumont's Christmas Giving

Under the direction of City Manager Ollie J. Bloyd, the municipal Christmas tree in Beaumont, Texas, has become established as a permanent institution for the promotion of the Christmas spirit, the distribution of gifts to the children and of baskets to the city's poor. The celebration of 1924 has been described by Frank L. Bertschler, Superintendent of Parks:

"A week before Christmas a 30-foot pine tree was erected on a revolving platform in the heart of the city. Electrically lighted and gaily decorated, it became a center of attraction night and day for the children. Public contributions of cash approached $1,000, and fruit, nuts, candy, and toys sent by the citizens were made up into more than 3,200 packages, which St. Nicholas presented in person from a tree in a public park after his sensational arrival atop a decorated fire-truck. Long lines of boys and girls, separated by a roped passageway, required nearly three hours to deplete the great stocks of Christmas gifts which the municipal employees assisted in distributing. While no child was excluded from the lines, it was primarily an occasion for the less fortunate, and all those who were poorly or thinly clad received not only their allotment of candy and fruits, with an appropriate toy, but gifts of value as well. More than fifty baskets containing blankets, bulky packages of groceries, and other essential things, as well as the usual Christmas accompaniments, were distributed to needy families by the Fire Department. Investigation for weeks prior to the event assured the proper placing of these gifts.

"Future support of the Beaumont municipal Christmas tree was assured by the interest shown by the many citizens who turned out for the occasion and watched the orderly yet joyfully eager lines of children as they cheered their patron St. Nicholas on his arrival and then received his bounty."

Rows of Lighted Christmas Trees on Main Street in Sabetha, Kans.

During the last holiday season the principal business street in Sabetha looked like a shining road to Christmas. Four blocks of lighted trees, five feet high, in front of the business

THE CHRISTMAS TREES ON THE PRINCIPAL BUSINESS STREET IN SABETHA, KANS.

CHRISTMAS CELEBRATION FOR CHILDREN OF MUNICIPAL EMPLOYEES, PASADENA, CALIF.

houses, made it worth driving to town at night to get a real Christmas thrill with one's shopping. The charm of these sidewalk "plantings" is suggestive in the accompanying photograph.

In Pasadena

The Christmas tree and entertainment which Pasadena gave last year for the children of the municipal employees was much appreciated, as one may judge from the attendance shown in the photograph. The municipal chimney and Santa Claus are there, and the singing of carols seems to be the next number on the program.

How the Chamber of Commerce in Flint, Mich., Helped the Local Post Office During the Christmas Rush

The post office at Flint was built to serve a city of 25,000 people, but now that the city has a population of over 130,000, the post office facilities are entirely inadequate. Much has been done to try to induce the Post Office Department at Washington to relieve the situation, but the action of the Department has been too slow for a city that has grown as rapidly as Flint. The idea of a Christmas tree wrapping station was conceived by C. W. Otto, Manager of the Flint Chamber of Commerce, and was first tried out during the rush before the holidays in 1923. It served many people at that time, but did not gain popularity until the second attempt during the rush season preceding Christmas, 1924.

The general scheme of the wrapping station was as follows:

The use of a vacant building near the post office was donated by the owner for this special occasion. There was sufficient room in the building to accommodate two lines for the wrapping counter, and two lines for the mailing counter. Postmaster C. O. Hetchler saw the value of the idea and offered splendid cooperation. Two experienced postal clerks were furnished by him and assigned to regular duties at the wrapping station during the rush days. One clerk worked on each line. These clerks weighed the parcels, sold the stamps, and insured the parcels. This supplied the wrapping station with complete post office service. The Boy Scouts were called on to collect empty pasteboard boxes from the down-town stores. In a few days the Scouts gathered several thousand boxes of various sizes, thereby rendering a valuable service to the community.

A staff of twelve persons, including the postal clerks, was necessary to conduct the wrapping station, which was crowded from

THE CHRISTMAS PACKAGE WRAPPING STATION, FLINT, MICH.

the day it opened until the day before Christmas. The people who used this service would make their purchases at the down-town stores and take the articles to the wrapping station, where they were provided with a box for each parcel. This box was wrapped with heavy paper and tied with strong twine, and a mailing tag was pasted on the package. The senders passed on in line to the mailing department, where the package was weighed, stamped, insured, and mailed out. This unique plan of service was much appreciated by those who took advantage of it.

The benefit of the station was threefold: First, it relieved congestion at the local post office and saved considerable time for people who would have had to stand in line a long time. Second, all parcels were securely wrapped and properly addressed. This was another help for the post office. Third, the sales people in the various down-town stores were not imposed upon by having to use their time in wrapping packages suitably for mailing.

The Flint Chamber of Commerce passed the idea on to all the cities in the United States with a population of 25,000 or more. Sacramento, Calif., Decatur, Ill., Ann Arbor, Mich., and Wausau, Wis., reported that they had tried the service and it had been a great success. It is estimated that in the ten days during which the wrapping station was operated in Flint 15,000 packages were wrapped, and that the total number of parcels mailed was 25,000.

Reducing Christmas Fire Dangers

Municipal fire departments do not find the Christmas season one of unmixed joy. Crowded stores, a great increase in the amount of inflammable material within easy reach, and—first, last, and all the time—human carelessness and thoughtlessness, make the holiday time a period of constant fire danger. This danger can be lessened if oft-reiterated warnings are heeded. Fire chiefs and private citizens will find of value the material on this subject sent out by the National Fire Waste Council of the Chamber of Commerce of the United States, Washington, D. C., and by the National Board of Fire Underwriters, 76 William Street, New York.

The National Plant, Flower and Fruit Guild, of 70 Fifth Avenue, New York, has announced a plan for saving American evergreen forests denuded by cutting for Christmas trees. In order to promote the use at Christmas time of living trees planted in pots and thereby lessen the number of trees cut down and used only once, arrangements will be made by the various organizations to purchase such trees from nurseries for distribution to aged and poor people, children and the sick. It is announced that upward of twenty Chambers of Commerce, Rotary Clubs and other bodies have offered to put the plan in operation in their cities. Two state Governors, Adam McMullen of Nebraska, and Tom J. Terral of Arkansas, have endorsed the plan, as have the American Forestry Association and the American Tree Association.

A Help-Your-City Suggestion Box

RECALLING repeated pre-election assurances of Mayor-elect Walker of New York that he would seek, welcome, and use helpful information and constructive suggestion from the "humblest citizens" and would cooperate "with every unselfish and intelligent law-abiding citizen for the betterment of the city," the Institute for Public Service has opened a Help-Your-City Suggestion Box for persons outside of civic organizations. In announcing this step on November 15, it offered to compile for the Mayor-elect, all the facts and suggestions received at its office, 1125 Amsterdam Avenue. The Institute's statement said, in part:

"During his primary and election campaigning Mayor-elect Walker reiterated three pledges which mean special opportunities for individual citizens between now and his inauguration day. He said he would make it his first job to clean house, because he knew a great deal of dust has been swept under the sofa, meaning that in eight years of any party's rule there would develop wasteful and incompetent practices of enough seriousness to justify his first study. Secondly, he promised to make a city-wide survey of conditions, needs, and resources in all parts of the city in order that he and his colleagues in the city government can plan and work for the whole city and its entire interests, instead of robbing Peter to pay Paul. Thirdly, he promised to seek, welcome, and use specific information and definite suggestions, whether from the humblest citizen or from prominent civic agencies.

"For all those who want to meet the new Mayor at least half-way, one month before his inauguration is worth more than two years after next July when, in spite of best intentions, the new city government will become increasingly sensitive lest outside suggestion may imply criticism of itself."

A Community Budget for the Control of Tuberculosis

By Philip P. Jacobs, Ph. D.

"PUBLIC health or community health is purchasable," according to an oft-repeated maxim originated and demonstrated by the late Dr. Hermann M. Biggs, former Commissioner of Health of New York. Community after community throughout the United States has demonstrated the truth of this maxim. Cities, towns, counties, and states can buy just as much health as they are willing to pay for. In the budget of health that a community buys, no items are of more importance than those that go for the control of tuberculosis. What is a reasonable provision for a community that is seeking to rid itself of the great white plague?

Without attempting to go into too much detail in the presentation of the data, there are certain essential factors that all experts agree on. First of all, there must be some central agency that has the responsibility given by the community for the control of tuberculosis. That body is the board or department of health. It is not enough for a community to think that a group of well-meaning citizens, however well intentioned but uninformed, can safely protect the health of the city or town. Health protection is an expert matter and takes the highest degree of skill. You would not have the butcher tinker with your automobile, nor the dentist paint your house.

In addition to an adequately manned and high-grade health department, properly financed, the community needs also provision for the education and training of its citizens with reference to health and the prevention of tuberculosis. This can be done through a proper system of teaching in the schools, through a systematic organization of newspaper publicity, by talks and lectures, the distribution of pamphlets and posters and other types of printed matter, through stunts, graphic displays, and in a variety of other ways. All of this means organization, and this usually is best led by a well-organized and properly financed tuberculosis or other health association—a volunteer or non-official body of citizens gathered together to supplement and work with the health department or the official agency.

Cooperation by municipal officials and civic organizations in pushing the local sale of Christmas seals

is one way of helping to secure some of the funds needed by most cities for more adequate control of tuberculosis.

Then, in addition, the community needs facilities for the treatment of tuberculosis. The sick need care for humanitarian reasons, for purposes of prevention and for purposes of cure. Hospitals and sanatoria are the first requisite. In these days we are also finding of value the preventorium for children who have been exposed to tuberculosis and who, unless they are given a little extra chance, are apt to break down more easily than other people. Open-air schools are a somewhat similar type of institution and are an absolute necessity for every populous community.

The tuberculosis and public health nurse is one of the agencies that no community can afford to be without. She it is who teaches, prevents, treats and assists in every way individuals and the community in the prevention of tuberculosis and the control of its health.

A cooperative medical profession is another requisite. Without the alliance of the physicians to the fighting forces of the community, little can be done. Prevention of tuberculosis is one of the great achievements in which the medical profession has figured and must figure even more prominently.

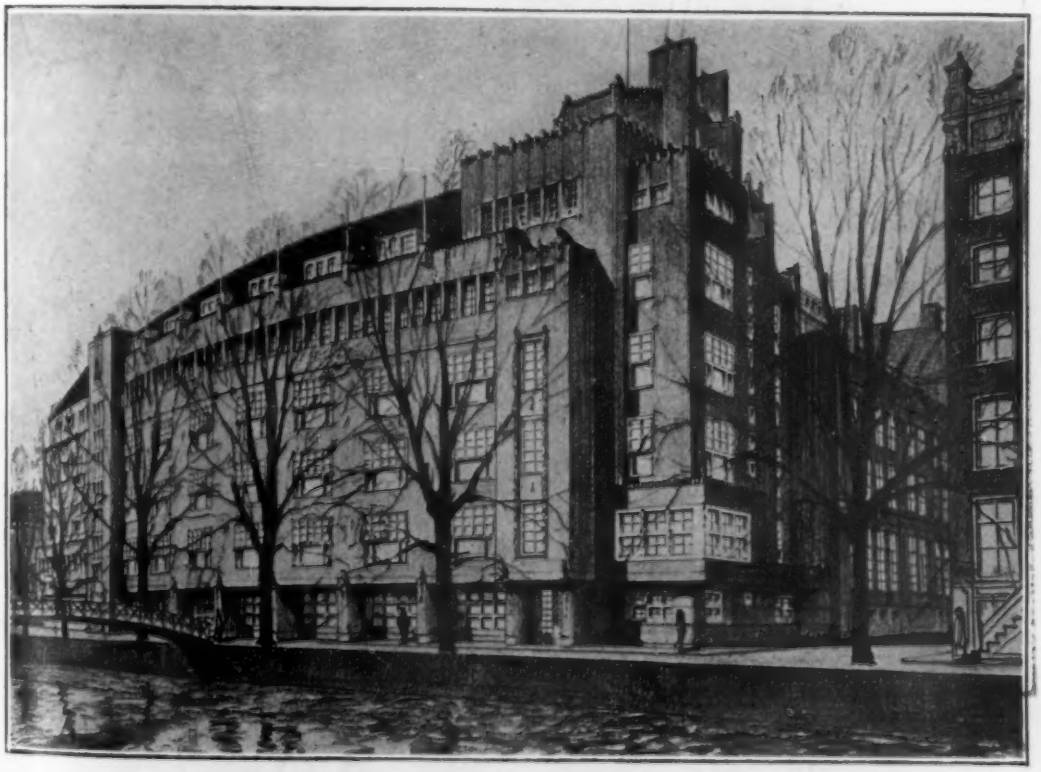
Not only must the campaign appeal to those who are sick, but also to those who believe themselves healthy. Consequently, opportuni-

ties must be given through the schools, through the factories, and in other ways, for normal, healthy individuals to be examined at repeated intervals. In that way only can they find out what are their health assets and their health liabilities and insure against a breakdown with tuberculosis at a later time. Medical examination of school children followed up by correction of defects and home nursing is a part of every community's responsibility to its children. So also, the employer of labor assumes a responsibility for the health of the men and women he employs, the moment he puts them on his pay-roll.

In addition to all these agencies, there must be developed through them and supplementing them some types of agencies that have for their primary business the finding of cases of tuberculosis. This is a disease that is not easily discovered. It needs skillful ferreting out on the part of physicians, nurses, and social workers. In several communities where studies have been made, such as Fargo, N. Dak.; Cumberland County, Pa., or Athens, Ga., it has been surprising to find on careful survey that the number of tuberculosis cases have ranged anywhere from ten to thirty times the number supposed to exist in the community. In Framingham, Mass., for instance, a careful examination showed that instead of 27 cases recorded in the Health Department and believed to be the entire tuberculosis quota, this little town of 17,000 people had nearly 250 cases of tuberculosis.

This is some of the machinery that a community needs to prevent tuberculosis. The question that arises at once is: Can the average city or county provide it? Scores of counties and cities with populations ranging from 30,000 and even less have and are providing some or all of this machinery. As a result, the death-rate from tuberculosis has been halved and in some instances reduced to a lower figure. Any community can buy a reasonable degree of freedom from the great white plague. It is a question of dollars and cents applied without political favor, without prejudice, and in a skillful, scientific way to promote the health and welfare ot the entire community.

New City Hall Under Construction in Amsterdam



AN INTERESTING TYPE OF MODERN DUTCH ARCHITECTURE

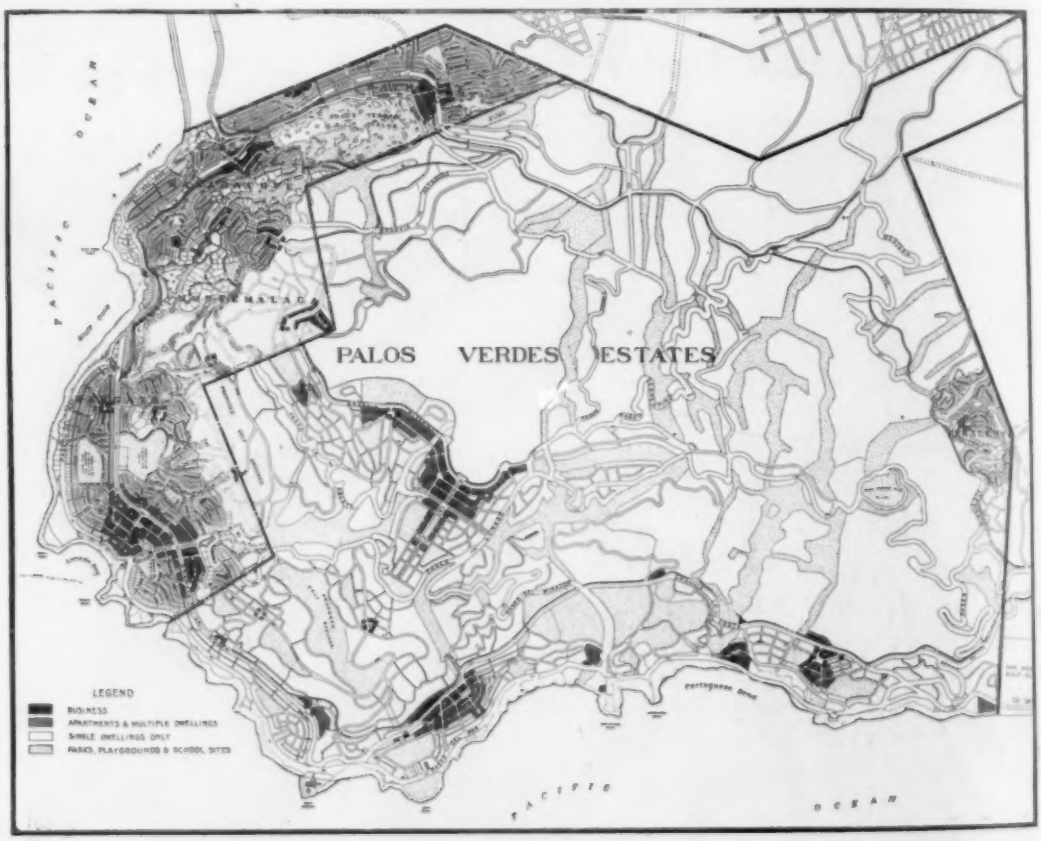
Palos Verdes Carries Its Town Plan into Execution

WHILE a good many plans for new towns have been made in recent years, very few of them have been carried out completely in the spirit and with the ideals with which they were originally designed. The Palos Verdes Project in the Los Angeles metropolitan district is therefore remarkable in that the original town plans* by Olmsted Brothers, landscape architects, and Charles H. Cheney, consultant in city planning, prepared in 1923, are now being completed in practically all the general details of arcaded plazas, zoning, major traffic street system, fitting contours, park and boulevard system, playgrounds and parks, golf course, bridle-trails, control of architecture, including color, annual tax for maintaining parks, street planting, and other features which give finish to the construction of any project of size.

With subdivision maps of approximately 2,500 acres of the plan now filed of record, and 3,000 lots sold out of a total of 5,000, in the first 3,200 acres of development, the town plan is fixed. Over $3,000,000 of improvement of streets, installation of utilities, park planting, etc., had been done up to September 1, 1925. A like amount is budgeted for completion during the next two years. Hence the project is well along towards completion.

Palos Verdes lies at the southwest corner of the Los Angeles metropolitan area, on a peninsula of rolling hills jutting out into the ocean toward Catalina and the channel islands, with more than twelve miles of seacoast, bays, inlets, and stretches of glorious scenery.

* Described in THE AMERICAN CITY for July, 1922, page 47.



TOWN PLAN FOR PALOS VERDES ESTATES, CALIFORNIA
A 16,000-acre community in the Los Angeles Metropolitan District, of which the 2,500 acres at the northwest corner is now practically complete

Sixteen thousand acres, or 25 square miles, was acquired by the original Vanderlip Syndicate in 1913, the sixth owner in succession from the original grant of the King of Spain more than one hundred years ago. Of this property, 3,200 acres are now being developed by the Palos Verdes Trust, financed in comparatively small amounts by about 5,000 participating owners, of whom some 2,000 purchased home sites at reduced rates as underwriters. Further areas of this tract are to be developed along similar lines, which will follow the general town plan laid out for the whole community—a plan arranged to accommodate a maximum of 160,000 people in a high-class garden suburb by the sea.

These first 3,200 acres are laid out in four principal townsites: Malaga Cove, near Redondo Beach; Lunada Bay, stretching for three miles southward along the coast; Valmonte, inland, on high ground overlooking the metropolitan district, the mountains and the sea; and Miraleste, forming a high-class restricted neighborhood overlooking San Pedro and the great harbor district of Los Angeles.

The Town Plans

The town plans include a layout for the entire 16,004 acres, prepared as a preliminary scheme for the selection of lots in March, 1923. The plans established the zoning of residential and the necessary small business districts, etc., for the whole area, and the allocation of necessary school and playground sites, parks, golf courses, hotel sites, etc. Construction of the first 3,200-acre unit is being carried out very closely along the lines of this original design.

While a large industrial development may later take place on the Los Angeles harbor at the east end of the property, all of this first development is laid out for the highest-type suburban residential district along the coast line, within easy reach of the metropolitan center of Los Angeles.

Zoning

Over 90 per cent of all lots are restricted to one-family houses. Local business centers of a few lots each, surrounded by a small group of apartment and house court sites, have been established as a matter of convenience, about two miles apart. In a few compact blocks, necessary stores, garages, and service stations are to be located. The number and kind of these buildings have been strictly limited—the project controlling architectural design in such a way as to make them distinctive and convenient, supplementing, rather than detracting from, the fine residential neighborhood surroundings.

Schools and Playgrounds

Elementary school sites and playgrounds of about 10 acres each have been established a mile apart for children under twelve, so that no small child need go more than one-half mile from any lot to the nearest school or playground. The new Palos Verdes School District unanimously voted $85,000 in bonds in April, 1925, to put up the first school building at Malaga Cove, now under construction.

For older children there are intermediate or junior high school sites every two miles apart, with playgrounds of about twenty acres each and ball fields, tennis courts, etc. Senior high schools with juvenile and adult recreation grounds, stadium and community center facilities, totaling approximately 40 acres each, will be located every three miles. A total of some 600 acres of neighborhood parks, the entire shore line for 4⅔ miles (in the first 3,200 acres), together with canyons, riding-trails, golf course and other smaller parks, have already been permanently deeded to the community association.

Protective Restrictions

The entire property is most carefully protected by restrictions filed of record, covering each subdivision tract as approved by county officials, establishing residence and business zones. Designated also are building setback lines, minimum cost of building, maximum and minimum heights of buildings, area of lot which may be covered, easements for utilities, and many other features which will permanently maintain this as a distinctive home neighborhood by the sea.

Most important of all restrictions is that which sets up a permanent Art Jury, composed of three prominent architects, a city planner, three laymen and a representative of the property owners. This board must approve all plans for buildings, fences, walls, planting, and other improvements. The Art Jury is endowed with $300,000 to start with. The income from this covers expenses and insures that its members will be able to give sufficient time to serve and advise all property owners, without charge, for reviewing their plans.

To maintain the planting, parks, street lights, and other improvements, the Palos Verdes Homes Association has been incorpo-

Coldwell Model "L" Motor Lawn Mower and Roller, showing Detachable Gang Units

A Dependable, All Round Mower

for Cemeteries *and* Parks

WITH the extra gang units attached, the cutting swath of the Coldwell Model "L" Motor Lawn Mower and Roller is increased from twenty-five to sixty inches, which more than doubles its capacity for mowing large open lawn areas. For cutting close up to and around monuments, trees and shrubbery, along walks and borders, the gang units can be detached in less than a minute.

The full width drive roller assures a smooth, even surface, and the gentle rolling with each cutting materially aids growth by firmly imbedding the earth around the roots of the tender grass plants.

Thousands of Coldwell Model "L" Motor Lawn Mowers and Rollers are in operation in the United States and foreign countries. Fully guaranteed, the Model "L" completes a maximum amount of work at a minimum of cost. Versatile—Economical—Dependable.

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COLDWELL LAWN MOWER COMPANY, NEWBURGH, N. Y., U. S. A.

rated. This is a permanent association of property owners, in which every building site has a vote. The Association has the power to interpret and enforce all restrictions, and collect the annual maintenance tax (which may never exceed the city tax rate of the old city of Los Angeles) for the upkeep of the property and for the general benefit of all property owners. Palos Verdes lies outside the Los Angeles city limits, and therefore such an organization is necessary.

To this association is being deeded title to the shore lands, golf course, and other parks. It will act as a permanent organizing force for community activities, helping to promote riding and fishing clubs and to organize libraries, pageants, and other worth-while community functions.

Webber, Staunton & Spaulding, architects

ARCADED PLAZA BUSINESS BUILDING AT MALAGA COVE, PALOS VERDES ESTATES, CALIF.

This is the first unit of a group to enclose three sides of this plaza with a sidewalk arcade, at one of the seven principal community centers on this 16,000-acre development near Los Angeles

No bill-boards or general advertising signs can be erected anywhere in Palos Verdes. The few store and business signs necessary must meet with the approval of the Art Jury.

All restrictions are in force until 1960, with automatic extension thereafter in 20-year periods, unless modified or changed by a majority vote of the property owners of that period. However, an important feature of these restrictions is that they may be modified locally as to zoning, setbacks, etc., with the approval of the owners of two-thirds in area within 300 feet of the proposed change, and of the Homes Association.

Construction

Construction in Palos Verdes commenced in April, 1923, and during the past two and a half years more than $3,000,000 has been spent on roads, installation of water-mains, gas and telephone service.

The water-supply comes from wells in the same area from which the city of Los Angeles secures water for the whole harbor district. The Palos Verdes Water Company has developed water enough to take care of a population of 30,000, in addition to park and golf course requirements. A 14-inch pipe line has been constructed through Valmonte and Malaga Cove and will shortly be extended to Lunada Bay. Water service for Miraleste has already been installed.

Palos Verdes to-day is teeming with activity. La Venta, a Spanish roadside inn, has been built on a height overlooking Malaga Cove, providing a center for social activities. The Golf Clubhouse, with its ladies' lounge and sun-room, men's grill room, locker-room and showers, has proved to be a very attractive feature of the community life.

The first arcaded business building in Malaga Cove Plaza was recently completed and occupied. More than $400,000 of building permits for houses, etc., were issued between November 1, 1924, and September 1, 1925.

Palos Verdes is building for permanency; it is building steadily and soundly, following the plans and practical ideals of competent engineers, city planners, and architects.

TYPHOID EPIDEMIC PREVENTED BY PASTEURIZATION OF MILK

Dayton, Ohio, is congratulating itself upon escape from what might have been a costly epidemic of typhoid fever. Six people on a farm near the city were found to be suffering from typhoid after drinking raw milk which came from another farm on which there were several cases of the disease. That same milk was sold within the city—but before it was sold there it was pasteurized. That standard precaution, according to the estimate of the city Division of Health, has probably saved at least fifty of Dayton's citizens from grave illness, possibly death.

—The Survey.

The Lure of a Well Lighted City

WHAT does better street lighting attract?

More business—new industries—new retail customers—new beauty—newly awakened civic pride. Are these the only attractions to be credited to the lure of light? Far from it. The solid advance in real estate values—the *permanence* of city improvement—these are two more outstanding results no well wisher of his city should overlook. And there are many more.

Your city, doubtless, needs better lighting now in some one section or in several neighborhoods. You will have to solve the problem of *economical permanence* of the system adopted—a permanence hand in hand with unquestioned architectural beauty of the units employed in the system itself. In helping you solve this problem—the King organization extends the lessons learned in a commercial lifetime of street lighting specialization.

A BOOK OF STREET LIGHTING FACTS FOR YOU

This book is a complete outline of better street lighting facts with illustrations of King standards and data relative their installation. We will gladly send a copy gratis to those who desire to investigate the whole big subject.

Send today for complete information on this important civic improvement.

KING COMPANY.

The World's Foremost Manufacturer of Street Lighting Standards

230 SOUTH CLARK STREET

Chicago, Ill.

Chamber of Commerce Activities in Public Affairs

The Health Appeal in Community Advertising

By Homer N. Calver
Executive Secretary, American Public Health Association

THE natural environment of cities is frequently emphasized in community advertising. The fact that a particular community is by the sea, or in the mountains, or has sunshine or an even temperature, has been proclaimed again and again, with the statement or implication that such a condition is conducive to health. This type of health appeal in community advertising is well known to you. It is the principal, and often the sole, appeal of resort cities. One must not forget, however, the man-made environment which has in many ways an even greater effect on health than does the natural environment. A city with the best climate in the world which has polluted water-supply, will kill more of its citizens and guests from typhoid fever than will a city which has a well-protected water-supply and the worst climate imaginable. Furthermore, man-made environment is controllable, and any city can truthfully advertise itself as a health resort if it will.

After all, the healthfulness of a community can only be measured by the protection it offers to its citizens. In our struggle to promote health, we must take people as we find them, put into their hands all the weapons, we can devise, and create for them the most favorable environment possible.

How often are we to appraise our forces? This question has concerned sanitarians for years, and we believe we now have the beginning of its solution. We have devised a method by which each protective measure may be rated, these rates compiled, and so give a score for each city thus studied; a single figure will tell where that city stands in its care for the life and health of its people. On the basis of these scores, cities may be arranged in a column, the best at the top, and the worst at the bottom, just as we arrange cities in their order of population, or volume of manufacturers.

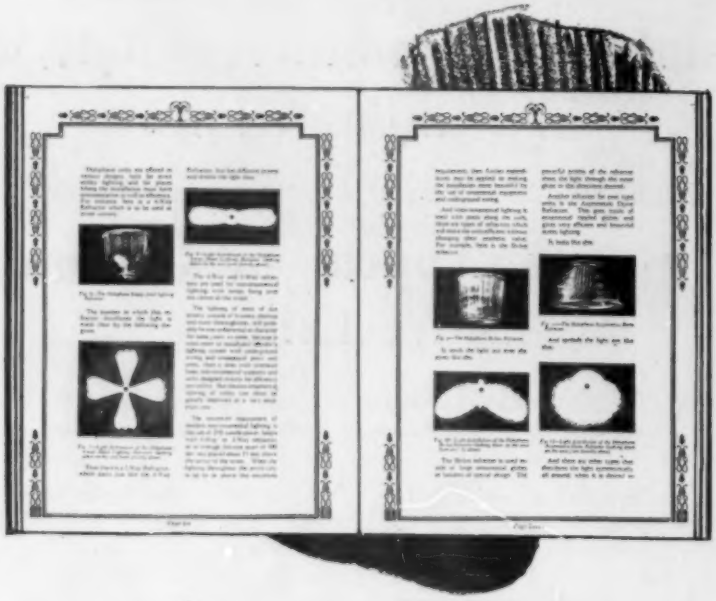
You may ask how we arrive at this valuation of cities; what are the essential elements

Appraisal Form for City Health Work

The American Public Health Association has officially declared that if all the preventive measures we now have could be universally applied, twenty years could be added to our lives.

In devising a method for appraising a city's health protection, the combined brains of the public health profession have set down the various known measures of protection against general and special conditions, have set a reasonable and practical standard of achievement for each activity, and so have constructed a rating schedule which sums up the worth of the whole community health program. The tremendous value of this scheme in community advertising is evident. Those cities near the top have at once a talking point that should have an enormous pulling power. Those cities near the bottom will have to set their houses in order before they can truthfully use the health appeal.

Printed copies of the Appraisal Form for City Health Work and of a mimeographed Schedule for Health Survey of Cities can be secured from the American Public Health Association, 370 Seventh Ave., New York.



Send for your copy
of this new book on street lighting

THE science of lighting streets efficiently and economically has made greater progress during the last few years than in decades before. These new developments are described and illustrated in Holophane's new book—"Streets That Are Safe." Every city official who is interested in street lighting should have his copy.

Written in an interesting, non-technical style, it tells what other cities are doing, and illustrates by actual photographs what they have accomplished. A copy will be mailed you free, if you will write the

HOLOPHANE COMPANY
New York & Toronto

HOLOPHANE

DIRECTS LIGHT SCIENTIFICALLY

of health protection? The activities may be divided into those which are carried on to meet problems common to all cities, and special activities designed to combat local special conditions. Under the head of common activities are such things as the protection of the water-supply and the milk-supply, the control of communicable diseases, and the services for the health of children. The necessary special activities depend largely on the geographical location of the city in question. In Texas, malaria control is important, in Michigan, goiter is a special problem, and in California, the prevention of plague is essential. Modern public health science has devised effective means of meeting both the common and the special problems.

Your local health department should take the lead in your community health work. Its job should be to put your city into Grade A, if it is not already there, or, if it is, to crowd the city at the top for first place. Sometimes the charge is made that the city hall is so politically encumbered that no effective service can be expected of it. However, public servants are usually eager to meet the wishes of the electorate, and it only requires that the Chamber of Commerce, Rotary Club, labor unions, and other community groups make their desires known forcefully and insistently to secure action. If you have a Grade C city, the health department will be quick to take the lead in making it a Grade A city, if it can count on adequate support from the taxpayers. Furthermore, the scoring of cities will go a long way toward removing the health department from partisan politics. In effect, the appraisal of city health work measures the health officer's efficiency. Heretofore, there has been no such measure, and there was no way to indicate accurately whether one health officer was better than another. The newly elected mayor of a Grade A city will think twice before he removes a good health officer to make a place for his inexperienced friends who might let the city lapse to Grade B or C. There is also political capital in the fact that an administration has raised a city from the C Grade to the A Grade.

Instances of the Importance of the Health Factor in Community Advertising

Often the first step in a community advertising campaign is to sell the community to itself so that every citizen may be an enthusiastic salesman. Nothing convinces a man so much as his own experience. If your citizens observe that they are infrequently ailing and constantly see measures taken for their protection, they must have a sense of security which they can convey to others. Furthermore, there is an immense propaganda going on at the present time which aims to inform the public about health matters, and as this takes effect, the people will become more and more critical of their own health institutions. If these institutions are good, the community advertiser has a fallow ground in which to sow the seed of satisfaction when he is attempting to sell a community to itself.

Next, you will wish to attract the tourist. Many now come by automobile. In Minnesota, the State Department of Health is posting signs along the highways outside of each town, which proclaim to all who travel that way that the water-supply of that town is safe to drink—if it is. Texas also has a sign which it posts near unsafe water-supplies. I have frequently alluded to the water-supply because its importance as a factor in health is readily appreciated. There are many other important factors which must not be forgotten. The intelligent parent will not now visit a city with his children if the milk-supply is not properly safeguarded. In Texas they have a scheme for rating cities on their milk-supply alone.

The unusual prevalence of a single disease may stand in the way of a city's progress for years, through killing off large numbers of its people, incapacitating others for longer or shorter periods, and driving many away. It was not so long ago that yellow fever held many of the cities of the South in its grip. The discovery of the cause of this disease and the vigorous application of the remedy have left these cities free to grow. Similar advancement may be expected to follow the conquest of malaria.

The dramatic and ghastly failure in health protection which we call an epidemic has a great effect on community business. Because of this, some communities make the foolhardy mistake of trying to keep the news of an epidemic from getting out. Experience has shown that the quicker a community learns of its situation, the quicker it may be remedied. This policy of suppressing news has cost many lives in cities which followed it. Sooner or later a condition which affects hundreds of people must become known, and delay in facing it only increases its severity, postpones the resumption of business, and makes the return to normal more difficult.

The health appeal is a strong appeal. The

A municipal sanitary truck on Budd-Michelin Dual Wheels and Pneumatics

This cushion of air is the only thing that can save the city streets!

TRUCKS are not the wreckers of your roads. *Hard tires* are. For hard tires pound the paving *8 times as hard as pneumatics!* No street can stand the punishment of that tremendous impact.

What can save the streets?

Nothing but a cushion of air—the cushion of air you get with Budd-Michelin Dual Wheels and pneumatics.

Every truck on Budd-Michelin Wheels saves 87% of the pounding that hard tires give the paving.

Every truck on Budd-Michelin Wheels means less money spent on street repairs, and greater funds available for new construction.

And every city that lends its influence to get the trucks on air helps its motorists, its tax-payers, and its reputation for good streets.

BUDD
WHEEL COMPANY
Philadelphia

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

health factor may be the deciding factor in the location of an industry, the selection of a convention city, or the attraction of visitors. We now have a means of determining the truth about a city's health protection, a method of appraisal which gives us a single figure that is an index of a city's healthfulness. It makes it possible to grade cities and list them in the order of their merit. The city that heads the list in health protection will have a distinction unexcelled.

—From a paper read before the Community Advertising Department of the Associated Advertising Clubs of the World, at the 1925 Convention in Houston, Texas.

New Chamber of Commerce Home a Community Asset

TOLEDO, OHIO.—In acquiring its attractive new home, occupying the entire fifth floor of the recently completed Richardson Building, the Toledo Chamber of Commerce has not only met its own requirements in the way of additional floor space for its administrative offices, dining-rooms and lounge, but has provided a well-constructed auditorium that will be a distinct asset to the whole community. The location of the new headquarters, in this modern office building in the center of the business district, easily accessible by street car and motor, is ideal.

The auditorium, a skylighted, non-pillared room, is equipped with a small stage and two dressing-rooms, and special care has been given to the acoustics and illumination, making it a most desirable hall in which to present small plays or sketches. By combining the auditorium and the main dining-room, the seating capacity for conventions or entertainments is about 1,200, and for banquets 800 can be comfortably seated at tables. Folding doors separate the two rooms, so that it is possible to accommodate at the same time two dinner parties of considerable size.

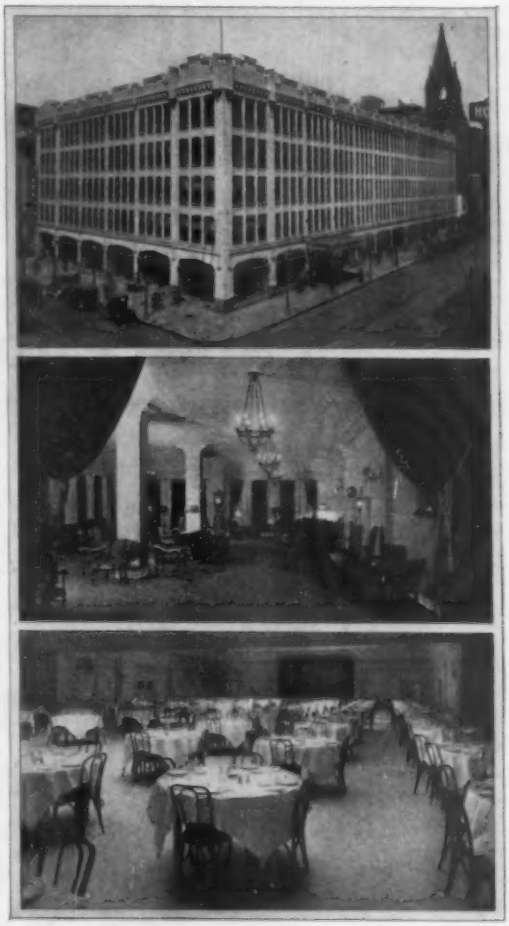
In the tastefully decorated main dining-room 327 may be seated for meals, and good service is assured through the efficient kitchen facilities that have been provided. There are in addition six private dining-rooms, with a total seating capacity of 125, which are being used to advantage for committee meetings and by the many local organizations and clubs that have so frequently utilized the facilities offered in the Chamber's former headquarters. Actual figures show that during October this year approximately 10,800 attended organization affairs in the new headquarters, as compared with 3,600 during the same month last year in the old building.

The ventilation of the auditorium and dining-rooms is one of the noteworthy features of the building. The system instal'ed is one that will assure fresh, clean air at all times. The air is supplied in large quantities to all parts of the rooms by a supply-fan controlled to give the correct amount of air for the number of people assembled, and is automatica'ly heated to keep the rooms at an even temperature.

Another asset of the Richardson Building is its ramp system garage, occupying space on four floors, which offers parking and storage accommodation for 400 automobiles. This solves the parking problem for members and visitors to the Chamber.

In keeping with the growth of Toledo, the Chamber's activities have greatly expanded in the last few years, and the layout of the administrative offices in the new building has therefore been a most important consideration. In addition to the large general office, private offices have been set aside for the Traffic Bureau, Trade and Industry Department, Foreign Trade Department, Convention Bureau, Membership Department and Publicity Department, affording these branches every possible opportunity for rendering efficient service.

FRANK G. SAXTON,
Secretary, Toledo Chamber of Commerce.



LOUNGE AND MAIN DINING-ROOM OF TOLEDO CHAMBER OF COMMERCE, WHOSE HEADQUARTERS OCCUPY FIFTH FLOOR OF BUILDING SHOWN ABOVE

Clearing the streets at Washington, D. C.

The Fordson powered shovel replaced 20 men

The rotary brush sweeps snow from sidewalks streets and skating rinks

Prepare for Blizzards

THE splendid success which many American cities have had with Fordson equipment for clearing streets and sidewalks, after heavy snows, has won the endorsement of users everywhere.

Fordson powered graders or V-shape snow plows quickly open drifted streets for vehicular traffic. Sidewalks and street crossings are kept clean by Fordsons equipped with rotary brushes.

The unrivalled economy and reliability of the Fordson is particularly well shown in actual performance on work of this character.

FORDSON TRACTOR

$495

F. o. b. Detroit

Authorized Ford Dealers are ready to demonstrate the efficiency of Fordson snow removal equipment. There is no obligation.

Ford

CARS · TRUCKS · TRACTORS

The City and the Educated Citizen

By Robert Ridgway

Chief Engineer, Board of Transportation, New York; President, American Society of Civil Engineers

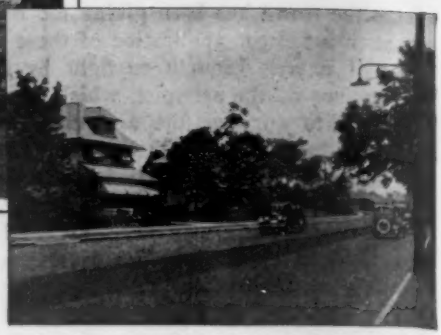
MUNICIPAL government has not kept pace with the advance in the art of municipal engineering, perhaps because the world has been giving too much of its attention to the application of those hidden laws of nature, brought to light by the investigations of the scientist, which contribute so much to our comfort and enjoyment of life, and has given too little attention to the adaptation of world-old principles of government to meet changed conditions.

Our cities have grown very fast, and rapid growth does not tend to the development of the best in government. Stable systems of self-government of states and nations required centuries of time for their development, while our large cities have existed but a few generations and the problem of their government is new. Let us pay tribute to those that have so labored that conditions are no worse than they are. The evils of city rule cannot be corrected at once and we must not lose faith on that account. It will require many years to accomplish this and it will come soon or late, depending on whether good citizens are ready and willing, or are not ready and willing, to do their share of the good work. If they are content to sit back and let others run their civic affairs for them, do not let them complain if things go wrong.

Most of us, I believe, recognize the faults of our municipalities but are inclined to lay the entire blame for them on the so-called politician, claiming that he is selfish and always stands in the way of reform. There, I think, we are wrong. Where such a type of politician is in control, it is because he is permitted by the public to be in control. It is true that he has much to answer for, but the fault lies principally in the apathy of the so-called good citizen who prefers to shirk his civic duty, who will not take the trouble to inform himself on public questions, and who is willing to leave to others the privilege and responsibility of voting, reserving to himself, however, the right to carelessly criticize those who are the public's servants, for alleged deficiencies, without knowing what is involved in the particular matter that may be under discussion, and regardless of whether the criticism is deserved or not. In my experience I have observed that men looked up to because of their education and standing in the community are frequently more ignorant of what is being done by their public servants and how it is being done than those with fewer educational advantages. The judgment of the latter is often more sound, because it is based on a real knowledge of the facts and is not a superficial snap judgment induced by casual discussion or by the reading of sensational articles in the press.

It has been said many times that the public is a hard taskmaster for those who are charged with directing its affairs, and this is largely so because people have formed the habit of jumping at conclusions without informing themselves of the merits of the case. Because of this lack of information, the public is likely to criticize the official who serves it well instead of the one who may deserve its condemnation. By so doing it not only does an injustice to one who deserves well of it, but it works against its own best interests. Many are misled by the mouthings of demagogues and do not take the time to reason out the particular thing which may be under discussion. Investigations are frequently made of public departments, sometimes for partisan reasons and political effect. It is well known to those familiar with these matters that such investigations are in many cases far from thorough, that they bring out but one side of the case, and that their conclusions, sometimes based on prejudice, are often fundamentally in error. The inevitable result in such a case is that the faithful and honest official, innocent of wrong-doing, is censured and discouraged. His department is disorganized, because nothing is more demoralizing than a sense of injustice done. Every honest man chafes under these conditions—and most men are honest. But, worst of all, the body politic suffers, because whatever faith it may have had has been destroyed. If public opinion were sufficiently alert to demand that all these investigations be rigidly thorough and impartial, we should find ourselves a long step in advance. The public should insist that reason be brought to bear on investigations of this kind and that all

Stephenson Boulevard, New Rochelle, N. Y., July 8, 1924.



Stephenson Boulevard, New Rochelle, N. Y., Tarvia-built, July 10, 1924.

Taking the "D - - -" out of "Detour"—

DETOUR! To motorists it stands for a disagreeable, round-about, time-wasting trip. To merchants it often means serious loss of business.

Tarvia Service *Chapter XII*

While occasionally detours are unavoidable, they should be of short duration only.

Tarvia solves this paving problem satisfactorily for all concerned. For a Tarvia road can be laid so quickly that detours are short-lived. No extended periods of conditioning after Tarvia construction. No long waiting before the new pavement can be opened to traffic.

When a Tarvia road is "*down*," it's "*open*."

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For Road Construction Repair and Maintenance

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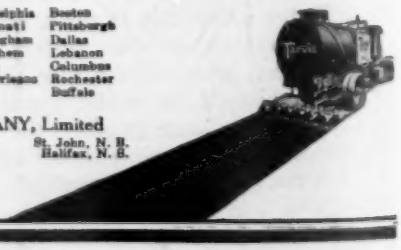

facts bearing on them be assembled and analyzed before a conclusion is reached.

Do not fall into the error of condemning those who are doing your work, without a hearing or on the say-so of those who may have private interests to serve. The man who feels he is doing his work well invites attention to it. Constructive criticism based on sound information is good for individuals and organizations. It keeps them up to the mark and prevents them from falling into a rut and aids in maintaining their morale. On the other hand, an effective and easy way to break down the morale of any organization and to destroy the initiative of its members is to nag it and find fault when it is doing well.

Please do not get the idea that I advocate the pampering of public servants. They are not a privileged class; in fact, they should be held to a more strict accountability than those in private life. As stated before, honest criticism is good for them. I make no plea for those who are incompetent, disloyal, or lazy. Public servants should be selected only with reference to their honesty and fitness, industry, and loyalty. If they do not measure up to these requirements, they should be dismissed and not allowed to demoralize their fellows, but if they do measure up to a high standard, they should have the inspiration of the firm support of the public they serve. In this way only can the morale of our public departments be raised to and maintained at that high level of efficiency that the public should have the right to expect.

ACKNOWLEDGMENT.—From an address delivered by Mr. Ridgway to the Alumni Association of Harvard University, after having accepted the honorary degree of Master of Arts, conferred by the University on June 18, 1925.

Not City Planning, But the Lack of It, Is Costly

ONE would think, in view of the wide-spread interest in city planning, that there would be a general understanding of its nature. The practitioners of the art, however, are often uncomfortable because their work seems to be misunderstood. In fact, the planners themselves at times unwittingly mislead the public into a wrong interpretation of their program. They dwell upon "achievements." They seek "accomplishments."

Results certainly ought to follow every city plan. The fault, however, is in the tendency to emphasize the more spectacular phases of city planning activity and to overlook the benefits of purely directive efforts. Buildings being torn down to clear the way for a new street are considered evidence of the effectiveness of a plan. Such signs are easily read. And when no work of this nature is being done, the natural inference is that the city plan is not having much of an influence upon civic affairs. Planning commissions, therefore, are eager to undertake what they call real city planning work, meaning corrective projects that catch the eye, so that people will know that they are functioning.

Planners even fall under this spell. A special devotion to the business of widening streets, clearing civic centers, rebuilding railroad terminals and opening playgrounds in populous neighborhoods seems to be necessary in order to establish the merit of one's particular brand of planning. It seems to be more convincing to be able to say that Des Moines has spent huge sums carrying out the city plan, that Memphis wrecked hundreds of buildings to widen streets, and that Chicago is going to spend $22,000,000 to double-deck South Water Street.

This point of view has affected the judgment of both public and administrative officials. The city plan is often viewed as an unnecessary extravagance—just another device for the dissipation of municipal funds. The proposals of the planning commission, however ingenuous, are always received in certain quarters with suspicion. Frequently, much-needed public improvements that would pay for themselves in a short time are turned down because the planning commission with its coolly calculated reconstruction program has urged that the time is ripe for them to be undertaken. In several cities with which the writer is familiar, the planning commission is doing considerable work of great value to the public, but is more or less discredited in the city hall because it has stood firm and insisted that certain civic improvements ought to be done right or not at all.

It is the unfortunate lot of these conscientious and devoted bodies that they appear most often as advocates of measures that seem to cost more than the measures proposed by politicians. The inexpensive day-by-day planning and visualizing and checking up which they try to do before growth takes place, somehow or other does not lend itself well to fire-whistle headlines.

It can be shown briefly that there is merit and profit in a courageous city planning program, even one that does propose expenditures that might be termed extraordinary. Many proposals incorporated in the city plan scarcely deserve notice, since the city, whether it has a plan or not, will come to them eventually as a matter of necessity. It is not the planning that is costly, it is the lack of it. The formless, sprawling cities of this country are appalling sources of economic waste.

The city planning program properly conceived is essentially a device to stop bungling and blundering in city development. Its primary aim is to prevent mistakes—to do the right thing at the right time, especially where new growth is concerned. . . .

Even if no buildings are torn down and no huge bond issues are authorized to carry out a city planning scheme, there is much highly valuable preventive work for a planning commission to do. This phase of the problem must not be overlooked. The smallest as well as the largest city can do planning of this sort. And every growing community will have a plan and will actively support a planning commission if the true significance of the movement is understood.

—From a paper read by L. D. Tilton, of St. Louis, read before the 1925 Convention of the Iowa Engineering Society. The complete paper, which cites numerous examples of effective city planning, is obtainable in pamphlet form from the Society at Ames, Iowa.

Autocar Motor Trucks Are a Safe Investment for PUBLIC FUNDS

PUBLIC officials entrusted with the conservative and wise expenditure of public funds can buy Autocars, knowing that these funds are being safely invested in trucks which can be depended upon to give economical service over a long period of time.

Autocar trucks are made by one of the oldest and largest truck manufacturers in the country. They are assured of exceptional service facilities by a nation-wide system of 50 direct factory branches.

Autocar trucks have been tested by years of economical service for thousands of owners in all lines of business. They dominate the commercial hauling of many large cities, especially in the coal trade, where working conditions are most severe.

The above is a reproduction of a page in the Autocar Public Service Book which lists scores of cities and Public Service Companies that are using Autocars. Write for a free copy today.

The Autocar Company, Ardmore, Pa.
ESTABLISHED 1907
Branches in 50 Cities

Autocar
gas *and* electric trucks
EITHER OR BOTH - AS YOUR WORK REQUIRES

The City's Legal Rights and Duties

Conducted by A. L. H. Street, Attorney at Law

Liabilities Concerning Ice and Snow

OVER against unconscionable claims for damages for pretended injuries on icy sidewalks must be set the fact that city officials do not always conform to their obligation to use reasonable care to have public sidewalks and crosswalks in reasonably safe condition for travel.

One of the leading and most authoritative decisions on the subject was handed down by the New York Court of Appeals (Kinney vs. City of Troy, 15 Northeastern Reporter, 728), where it was said, in reversing a judgment against defendant city:

"A city is not bound to keep its sidewalks absolutely free from ice. . . . The situation was common to all cities in a northern climate, and to all sidewalks in such cities—a sidewalk, difficult, it may be, of passage, but if so, from the ordinary action of the elements only, and from a formation of ice, which no body of men are competent to prevent, nor under any ordinary circumstances to remove. Something more than a slippery sidewalk must be shown to enable one suffering from it to cast the burden of compensation upon the city."

Reaching a similar conclusion—that a city is not absolutely bound to keep its sidewalks in safe condition—the Minnesota Supreme Court said in the case of Henkes vs. City of Minneapolis, 42 Minnesota Reports, 530:

"In this climate such a thing would be a physical impossibility, and an attempt to do it would involve an amount of expense that would bankrupt any city. No court has ever held that reasonable care required an attempt to do any such thing. An unbroken line of authorities holds that mere slipperiness of a sidewalk by either ice or snow is not a defect for which cities are liable; that their obligation to keep their streets in a safe condition does not extend to the removal of ice which constitutes no other defect than slipperiness."

The opinion cites in support of this statement decisions of the highest courts of Massachusetts, Maine, Michigan, New York, Illinois, Iowa, and Wisconsin.

But the same court recognizes, as do the courts of other jurisdictions, that a city may be held responsible for injury traced to accumulation of ice or snow through municipal negligence, as where it is caused by defective construction or structural maintenance of walks, drains, etc.

In the recent case of Roberts vs. Village of Buhl, 200 Northwestern Reporter, 354, it appeared that at an alley corner, defendant village installed iron covers over the curb gutter in line with the sidewalk. It operated a V-shaped snow-plow piling the snow along the sides of the walk. Thawing temperature caused the snow to melt, and the water passing under the iron aprons froze, and the gutter thereunder became clogged, and the irons at the point of contact with the walk at the curb heaved and became elevated about 1½ inches. The water overflowed and was held on the sidewalk by the elevated iron aprons, where it became smooth, slippery ice, and by reason thereof a pedestrian fell and was injured. The Minnesota Supreme Court decided:

"That the icy condition was not due to natural accumulation, but to artificial conditions; that the apparatus was negligently permitted to become in such a condition as to be peculiarly liable to cause the formation of the ice which the village did not remove, and the village is liable for such injuries, it appearing that the condition existed for such period of time as to constitute constructive notice to the officers having charge of such matters."

And, in the case of Naze vs. Town of Hudson, 145 Northeastern Reporter, 468, the Massachusetts Supreme Judicial Court said:

"The allegations of negligence in the declaration are that the plaintiff was injured by slipping upon ice which had accumulated in a hollow in the sidewalk near the stump of the tree. G. L. c. 84, sec. 17, provides that a town is not liable for an injury or damage sustained in a public way by reason of snow or ice thereon, 'if the place at which the injury or damage was sustained was at the time of the accident otherwise reasonably safe and convenient for travelers.' This statute was construed in Newton v. Worcester, 174 Mass. 181, and at page 187, 54 N. E. 521, 523, it was said by Hammond, J.:

"'We think the proper and only reasonable interpretation of the statute is, that wherever ice or snow is the sole proximate cause of the accident, there shall be no liability, but where at the time of the accident there is any other defect to which as a proximate cause the accident is in part attributable, there may be a liability notwithstanding the fact that it also may be attributable in part to ice or snow.'

International Harvester Trucks

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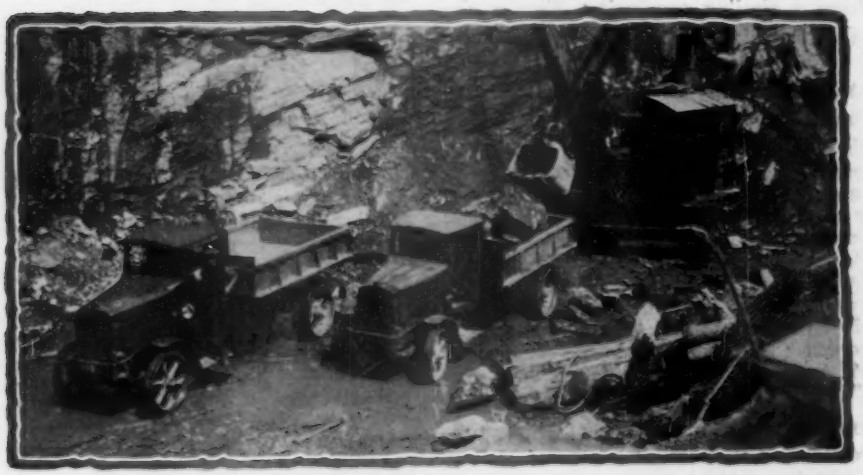


"In the case at bar there was evidence that the accident was partly due to ice as a proximate cause, and that the stump or root near the edge of the walk, against which the plaintiff struck her foot and fell, was a defect to which the accident was in part attributable. In these circumstances the defendant may be held liable."

As to the liability of abutting property owners, the New Jersey Court of Errors and Appeals, in the case of Sewall vs. Fox, 121 Atlantic Reporter, 1357, followed this legal principle laid down in 1 Thompson on Negligence, sec. 1219:

"The owners and occupiers of premises abutting a street in a city are not responsible to individuals for injuries resulting from a failure to remove from the sidewalk accumulations of snow and ice created by natural causes, although there is a valid ordinance requiring them to remove such accumulations. The only liability is to pay the penalty prescribed by the ordinance."

There are numerous decisions establishing a uniform rule that a city cannot transfer its primary responsibility concerning the safety of sidewalks to abutting property owners by ordinances of the kind above mentioned. Among these decisions are holdings of the appellate courts of Connecticut, Massachusetts, Maryland, Michigan, Missouri, Nebraska, New York, North Carolina, Ohio, Oregon, Rhode Island, Washington, and Wisconsin.

Items of Municipal Law

Municipal Liability for Personal Injuries Caused by Fire-Fighting Appliances

In the case of Gregoire vs. City of Lowell, 148 Northeastern Reporter, 376, the Massachusetts Supreme Judicial Court exonerated defendant city from liability for injury sustained by a pedestrian in tripping over a coil of fire hose lying in a street near where the fire department was extinguishing a fire. The Court said:

"The hose was in the street for the lawful purpose of carrying water from the hydrant to the fire. The firemen were performing a public duty and the fire department could exercise its own discretion in deciding where to lay its hose and how to lay it, and no other officer or department of the city had a right to interfere with the firemen in the performance of their duty. The members of fire departments are public officers; they have duties, imposed by law for the benefit of all the citizens, over the performance of which the municipality has no control and from which it derives no benefit in its corporate capacity. The acts of such public officers are their own official acts and not the acts of the municipal corporation or its agents. . . . A municipality is not liable for the wrongful or negligent acts of its fire department or firemen."

City's Responsibilities Concerning Surface Waters

A city has no control over the natural flow of the surface water. Nor is it liable for damage caused by the discharge of surface water which is the result solely of the grading of streets, the erection of buildings, and the improvement of private grounds. If, however, the city collects surface water into a single channel and casts it in a large and substantially increased volume on an adjacent owner so that the stream will be filled beyond its natural capacity and thereby causes the stream to overflow and flood his lands, the owner has a cause of action. But the ordinary flow of surface water will not be interfered with or limited to the natural flow as it existed before the pavement of streets and other improvements prevented the absorption of some portion of such waters by the soil. (New York Court of Appeals, Fox vs. City of New Rochelle, 147 Northeastern Reporter, 544.)

Individual Liability of Municipal Officers for Wrongful Acts

"We think," declared the New Jersey Court of Errors and Appeals in the case of Florio vs. Mayor and Aldermen of Jersey City, 129 Atlantic Reporter, 470, "that a sound public policy requires that public officers and employees shall be held accountable for their negligent acts in the performance of their official duties, to those who suffer injury by reason of their misconduct. Public office or employment should not be made a shield to protect careless public officials from the consequences of their misfeasances in the performance of their public duties."

Accordingly, it was held that, although defendant city was not liable to plaintiff for injury sustained through negligence of the driver of a fire-truck, the city being engaged in the performance of a governmental function in maintaining the fire department, the exemption did not extend to the negligent driver.

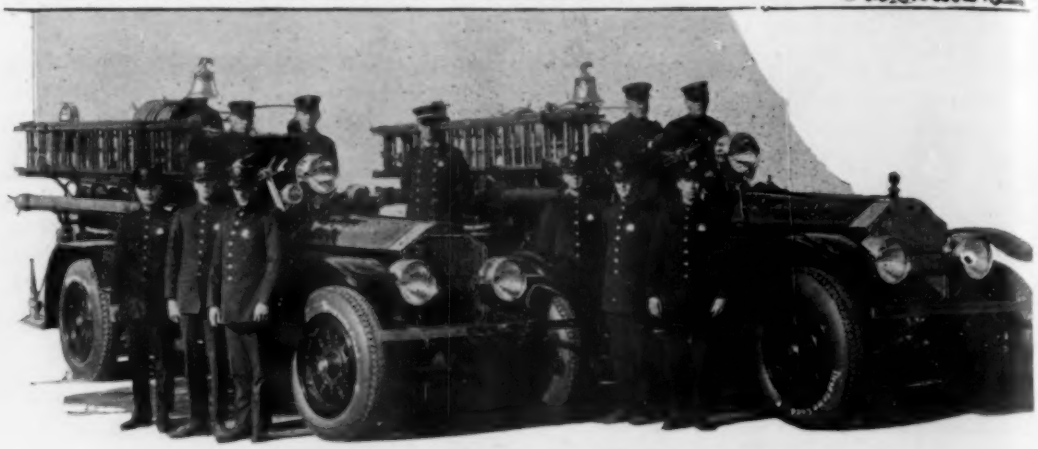
Abutter's Title to Land Occupied as Street

Where a tract of land has been subdivided and platted and a common-law dedication of the streets made, a conveyance of a lot abutting on a street, made by the party who platted and made the common-law dedication of such streets and alleys, conveys to his grantees and their grantees title in fee simple to the center of the street upon which the lot conveyed abuts, subject only to the public easement in the streets; thus when the public easement in the street is abandoned or is otherwise terminated, the title to the land on which the street was located, but now vacated, with all the incidents of ownership, becomes absolute in the adjacent lot owners. (Illinois Supreme Court, Waterloo Condensed Milk Company vs. Voges, 147 Northeastern Reporter, 373.)

City's Duties Concerning Surface Waters

"A city is bound to keep its streets free from nuisances, and it has no right to collect surface water on the public highway, or on the land of a private citizen, and discharge it upon the property of another, 'where it was not wont to go,'" declared the Iowa Supreme Court in the recent case of Farley vs. City of Des Moines, 203 Northwestern Reporter, 287.

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER - - - Harvey Firestone



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Zoning Notes

Prepared by Frank B. Williams
Author of "The Law of City Planning and Zoning"
From data collected by the Zoning Committee of New York (233 Broadway)
Mr. Williams may be addressed in care of THE AMERICAN CITY, 443 Fourth Avenue, New York

Recent Zoning Ordinances and Enabling Acts

CONNECTICUT.—Special Acts, 1925, authorizing the following local governments to pass zoning regulations: the town of Darien (No. 462, p. 922); the city of Hartford (No. 9, p. 553, No. 484, p. 987); the city of New London (No. 487, p. 997); the city and the town of Norwich (No. 494, p. 1024); the Pawcatuck fire district (No. 467, p. 931); the town of West Hartford (No. 469, p. 934); and amending the zoning law with regard to the town and borough of Greenwich (No. 408, p. 881); and the city of New Haven (No. 490, p. 1006.).

CEDAR RAPIDS, IOWA.—Ordinance, October 29, 1925.

Recent Zoning Decisions

COLORADO.—*Milton v. Aspell, District Court, No. 86074, Div. LV, August 5, 1925.* The zoning ordinance of the city and county of Denver (No. 14, Series of 1925) is a reasonable and valid exercise of the police power, and the zoning of the lots in question for residence, is proper.

COLORADO.—*Willis and Colby v. Board of Adjustment of Denver, District Court, October, 1925.* Prior to the passage of the zoning ordinance, the petitioners bought vacant land adjacent to a brick-yard in operation in a sparsely settled section of the city. The zoning ordinance placed the vacant land and adjacent territory, including the brick-yard in operation, in a "B" residence district. Thereupon the petitioners applied for a permit to use their land as a brick-yard, claiming that, on account of its proximity to a brick-yard already in operation, their vacant land was not useful for any other purpose.

The Building Inspector refused to grant this permit, and, on appeal, the Board of Adjustment sustained him. Judge Bouck, in an oral opinion, sustained the action of the Board of Appeals as reasonable, stating that in his opinion the land would never become valuable for residential purposes except by preventing the invasion of other brick-yards.

CONNECTICUT.—*No. 28939, City of Hartford v. Katz, Superior Court, Hartford County, July 30, 1925.* W. Arthur Countryman, Jr., the Corporation Counsel of Hartford, has been kind enough to call our attention to inaccuracies in our statements in the October "Zoning Notes" based upon a newspaper article, with regard to this case. He says:

> "This decision was made on the defendants' demurrer to our complaint raising the question of the constitutionality of an interim zoning ordinance of the city which was passed under the authority of a special act of the General Assembly applying only to the city of Hartford. The demurrer raised the sole question of constitutionality with regard both to the enabling act and the ordinance, and so far no issues of fact have been tried out.
>
> "You are not entirely accurate in your statement in the October issue that the defendants applied for a permit to erect a gasoline station. What they actually did was to attempt to forestall the action of the zoning ordinance in connection with their property by getting a permit and sinking tanks for gasoline pumps at midnight of the day before the ordinance became effective. An injunction suit was brought by the property owners and by the city to restrain them from using the property as a gasoline station and to make them remove the pumps.
>
> "A certain portion of the same property, containing a dwelling house, had been used without change as a shop for the sale of antiques prior to the time when the zoning ordinance became effective. It is the question of the genuineness of this prior business use which will be involved if the issues of fact are ever tried out.
>
> "I may say that the Hartford ordinance was modeled on the Lowell ordinance which was passed upon, as Judge Brown indicates, in the Stoklosa case."

NEW JERSEY.—*Eaton v. Village of South Orange (Supreme Court), 130 Atlantic Reporter 362.* In the village zoning ordinance it is provided that:

> "In Residence 'A' and Residence 'C' districts, no part of a building shall be higher above the curb level than the distance it sets back from the street line of the street on which it faces and the front yard setback distance to the main front wall shall not be less than 25 feet, except that on a corner lot the setback distance from one street line may be reduced to not less than fifteen feet."

Held, an unjustifiable use of the police power. In accord, *Heller v. Village of South Orange, Supreme Court, No 236, May Term, 1925.*

NEW JERSEY.—*Kaycoff v. Kaltenbach, Building Inspector of the City of Elizabeth (Supreme Court) 130 Atlantic Reporter 366.* The fact that the relator after the inspector's refusal to grant a permit, "petitioned" the Board of Adjustment, established under the zoning law (chap. 146 of Laws of 1924), and was refused permission by them is no ground for refusing to allow him a mandamus.

In this connection see also *State ex rel. Roth*

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The Linn Snow Plow has **power** and **endurance.**

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LINN MANUFACTURING COMPANY

MORRIS, N. Y.

v. City of East Orange, Supreme Court, No. 261, May Term, 1925, decided October, 1925.

NEW JERSEY.—*Krumgold and Sons, Inc. v. Mayor and Aldermen of Jersey City, Court of Errors and Appeals; New Jersey Advance Reports, Vol. III, No. 43, October 24, 1925, p. 5146.* Krumgold and Sons, Inc., was the owner of land located in a district made by the zoning ordinance a residential district. It applied for a permit to erect on this site a building partly commercial, and was refused. It then at once appealed to the Supreme Court for a peremptory writ of mandamus, and its petition was granted. This is an appeal to the highest court in the state from that decision.

It was contended that the case was not governed by the Nutley case (*Ignaciunas v. Risley, 125 Atl. Rep. 121*) as held by the Court below. At the time the Nutley case was decided, the statute (Ch. 146 of the laws of 1924) had not been passed. That statute provides for a board of appeals, to which application shall be made in cases of hardship and injustice. Krumgold and Sons, Inc., did not apply to this board, but resorted at once to mandamus. The Court holds that a resort to this board is unnecessary, the zoning ordinance being void.

This is the long awaited decision by the highest court of the state with regard to the validity of zoning in New Jersey under the carefully drawn zoning enabling act of 1924.

NEW YORK.—*Matter of Multiplex Garages, Inc., v. Walsh; Matter of Ashley v. Same, Supreme Court, reported in New York Law Journal, June 28, 1924, p. 1222; Appellate Division, reported in 213 App. Div. 155, 210 N. Y. Supp. 178; Court of Appeals reported in New York Law Journal, October 28, 1925, p. 383.* The petitioners have erected and are about to erect on separate lots one-car garages. The proposed garages are unconnected and are separately numbered, and are intended to be leased out separately and are not to be operated otherwise than individually. *Held,* not violative of the provisions of the zoning resolution of New York City, prohibiting the use of any building or premises for and the erection within a business district of a garage intended to be used for more than five motor vehicles.

OREGON.—*Kroner v. City of Portland, Supreme Court (in Banc.), November 3, 1925.* The building code of the city, as a prerequisite to the issuance of a building permit required in the case of creameries employing over five persons, and certain other industrial structures, the filing of plans and the giving of certain other information. Plaintiffs applied for a permit for a creamery employing over five persons in a certain location without filing the plans or giving the information as required. Subsequently a comprehensive zoning ordinance was passed, placing the location in question in a residential section. The permit was refused. *Held,* that the provisions of the zoning ordinance in question in this suit were a valid exercise of the police power.

Courtesy of Newark Evening News

THE PLIGHT OF THE NEW JERSEY HOME-OWNER AS A RESULT OF COURT DECISIONS ON THE VALIDITY OF ZONING

The Price of Snow is Going Up

Every year, the price of snow goes up, for every year, we become more and more dependent upon our automobiles and our streets for transportation. To cripple that transportation, as a snow storm does, entails a high loss to the business of the town.

Any of your merchants will tell you this. Any of your constant auto users will back them up.

To keep your streets clear of snow with hand labor means high costs. Perhaps, that is why your city has had to content itself with "single track" streets—opened only by a single lane along their centers.

Barber-Greene Snow Loaders make clear streets possible each winter without entailing high hand labor costs. A single Barber-Greene can often replace as many as 200 shovelers. It can often clear a stretch in fifteen minutes that a shovel gang could not clear in four hours.

It can make truck loading a touch and go affair. It can make a fewer number of trucks do more work. And in the summer, the Barber-Greene can be converted into an efficient bucket loader to handle a hundred and one odd jobs about a town.

There, briefly, are the reasons why other cities all over the snow sections are turning to Barber-Greenes. The price of snow is going up, and they refuse to pay it.

What they are doing is shown in our latest snow removal booklet by actual pictures and data. Send for a copy.

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The Municipal Bond Market

By Sanders Shanks, Jr.
Editor, *The Bond Buyer*

AS has been expected, the flotation of new municipal bonds has shown a marked decrease since the first of October. The total of new issues brought out in October was $82,095,742, as against $121,307,188 in September. It is probable that the final November figure will not even reach the reduced October total. Although there have been fewer issues offered in recent weeks, those few issues have not met with the success that is usually the case when new issues are scarce. The municipal bond market has been unusually quiet and dealers are disinclined to take on new commitments.

One of the largest borrowers was Erie County, New York, which sold $2,325,000 at 4.21 per cent, which is almost the highest rate that county has ever been obliged to pay. The city of Yonkers also disposed of a bond issue, but at an interest cost ⅛ of 1 per cent over what was paid in January of this year. The city of Philadelphia offered $15,000,000 4¼'s and received bids for only $6,100,000. These offers were submitted by a few local institutions and city sinking funds which offered about par for the bonds. There were no bids received from dealers. The Philadelphia School District met with a similar situation when it offered $5,000,000 4¼'s. In each case the interest rate has been increased to 4½ per cent, and it has been announced that the bonds will be reoffered in December.

November election returns indicate that the taxpayers of the various municipalities throughout the country feel that they do not wish to pledge themselves to the incurring of any large additional debt for the present.

Returns of the November general election show that only about a third of the issues voted upon received the approval of the voters.

The two largest propositions that were submited were $32,500,000 Toledo city bonds, which were defeated with the exception of $3,000,000 for grade crossings, and Kansas City, Mo., which approved only $2,400,000 fire and hospital bonds out of a total proposed issue of $26,610,000. It should be said, however, that all the proposed issues in Kansas City and several in Toledo received a majority vote, but not the two-thirds and 55 per cent vote required by law in those cities, respectively.

Although official returns have not been announced, it is believed that the voters of New York State approved $300,000,000 for grade-crossing elimination and $100,000,000 for permanent improvements, these amounts to be spread over a period of ten years. There is, however, some doubt as to the $100,000,000 issue.

With the prospect of reduced borrowing by states and municipalities, municipals should enjoy a keener demand from those investors who prefer them for their inherent security and tax exemption and from institutions which are required by law to invest funds held in trust in this class of security.

The following list of the more important issues indicates that the individual blocks brought out in November were of unusually small size:

Amount	Municipality	Maturity	Rate (%)	Net Yield (%)
$ 330,000	Lawrence, Mass.	1926-55	4 & 4¼	4.01
200,000	Delaware	1965-25	4	4.16
2,325,000	Erie Co., N. Y.	1927-54	4¼	4.21
1,180,000	Yonkers, N. Y.	1927-65	4½	4.26
400,000	Omaha, Nebr.	1945	4¼ & 4½	4.37
375,000	Huntington, N. Y., So. Huntington Water Dist.	1930-44	4.40	4.39
425,000	Dearborn, Mich.	1926-55	4½	4.40
384,473	Mahoning Co., O., Sewer Dists.	1927-40	5	4.57
300,000—	Washington Suburban Sanitary Dist., Md.	1975-55	4½	4.44
1,500,000	Orleans Par., La.	1926-35	4¾	4.67
500,000	Gibson Co., Tenn.	1936-65	5	...
625,000	Polk Co., Fla., Spec. Road & Bridge Dist. No. 12	1930-55	6	6.30

Bureau for Street Traffic Research Created

AS a result of a recent action by the Board of Regents, the University of California has announced the creation of the Albert Russel Erskine Bureau for Street Traffic Research, to be located in the Southern Branch of the University in Los Angeles. The Bureau was established as the result of a grant by the Studebaker Corporation of America.

In offering the Bureau, which will carry the name of Albert Russel Erskine, President of the Studebaker Corporation, Paul G. Hoffman, Vice-President of the Corporation, said:

"The Studebaker Corporation of America, realizing the pressing character of the street traffic problem and the need for the collection of scientific information on the subject, desires to offer funds for the creation of a research bureau and graduate fellowships in the University of California."

The Bureau will center its activities on a study of urban traffic difficulties and their correction. Extensive investigations will be made of pedestrian control, conflicts between street cars and automobiles, parking methods, speed, street design, grade separation, signaling devices, uniform regulations, and allied subjects. Reports of the Bureau will be made available to all American cities.

The two fellowships created by the Studebaker Corporation will each pay $1,000 per year and will be granted to graduate engineering students in the University of California at Berkeley. They are designed for the purpose of making possible intensive research and encouraging an interest in traffic engineering as a profession.

In accordance with the terms of the offer of the Studebaker Corporation, Dr. Miller McClintock, a nationally known traffic authority who is at the present time Chairman of the Department of Political Science of the University of California, has been appointed Director of the Bureau. Dr. McClintock will be relieved of teaching duties in the University the beginning of the second semester of this year, when he will resign as Chairman of the Department of Political Science.

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THIS convenient pocket volume contains a mass of accurate snow handling data, gathered from all over the United States and now published in book form for the first time.

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- Automatic Blade Release that lets scraper bar ride over obstacles.
- Universal Axle Clamps that fit any type of truck.
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In a recent check-up of snow equipment, independent investigators found 1683 Good Roads Champions out of 2181 snow plows in use in 66 communities.

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Municipal and Civic Publications

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Water Works Practice.—American Water Works Association, 170 Broadway, New York. 1925. XX + 790 pp. Tables, diagrams. $5.00.

A Manual issued by the American Water Works Association, as the result of the work of the Association's Council on Standardization, of which George W. Fuller is Chairman. It is based on the reports of the committees of the Council and on papers with discussions presented to the Association in recent years. The material has been edited by Abel Wolman, and has been prepared primarily for members of water-works boards and commissions who are responsible for the general policies of the works; for salaried officials who manage and superintend such works, and for the designers of the most technical portions of the works. It is a publication of the greatest importance in its field, representing, as it does, water-works principles and practice authorized and reviewed by over 300 members of the Association. The topics discussed in the Introduction are: the development of modern water-works; the significance of water-supply in disease incidence; the jurisdiction of state and federal authorities over water-supplies; international aspects of water pollution; liability for disease contracted from a water-supply; and the beautification of water-works properties. The divisions of the general subject are treated as follows: Collection of Water, three chapters; Quality of Water Supply, one chapter; Treatment of Water, seven chapters; Distribution of Water, seven chapters; Financing and Management, five chapters; and Fire Protection, two chapters. The Appendix gives standardized forms, procedures, specifications, and contracts. The Manual is designed to stimulate study, discussion, criticism, and progress in this branch of public service, on which so greatly depend the health, safety, and welfare of all our communities.

Foundations of Bridges and Buildings.—By Henry S. Jacoby, Professor of Bridge Engineering, Emeritus, Cornell University, and Roland P. Davis, Professor of Structural and Hydraulic Engineering, West Virginia University. Second edition. McGraw-Hill Book Company, New York. 1925. XIX + 665 pp. Illustrated. $3.00.

So many changes have been made in the text in bringing this new edition up to date that the book has been entirely reset. New paragraphs are scattered throughout, the number of chapters remaining the same. This new material covers the significant changes in professional practice regarding foundations since 1914. Under Piles and Pile Driving there is a more complete treatment of marine borers and mechanical protection, new types of piles, pulling sheet piles, use of new followers, and new formulas for bearing power. New types of cofferdams and caissons are shown, and new standard designs of piers and abutments. There is an article on timber piers, and in the discussion of underpinning, an article on the protest method.

The Art of Town Planning.—By Henry Vaughan Lanchester, F. R. I. B. A., M. T. P. I. Charles Scribner's Sons, New York. 1925. XX + 244 pp. Illustrated. $7.50.

This is a volume in the Universal Art Series, edited by Frederick Marriott. The author justifies his dwelling at length upon the history of the growth of towns by maintaining that we thus gain an impression of technique in this art, and of how conditions of life have affected its progress and how man has modified these conditions—all this forming the best and most dramatic approach to the visualization of what the future may produce in orderly, efficient, beautiful city growth. Therefore he takes us back to ancient civilizations, returning, through Graeco-Roman town planning, the medieval cities, developments in Britain, the earlier and later Renaissance, the horrors of industrial expansion, and the reaction due to Romanticism, to the present time, when town planning is recognized as based on the coordinating of science and material. The remainder of the volume develops delightfully and stimulatingly the theme that social well-being is fundamental to sound town planning, discussing broadly, yet with interesting detail, the ways in which modern town planning satisfies the demands of healthy, active community life.

A Health Survey of 86 Cities.—By the Research Division of the American Child Health Association. Published by the Association, at 370 Seventh Avenue, New York. 1925. XXXIV + 614 pp. Charts, tables. $3.00.

For a summary of facts and recommendations from this survey, as given at the opening of this volume, see pages 461-464 of the November issue of The American City. The survey was undertaken at the suggestion of Secretary Hoover and was carried out from January to June, 1924, by five men trained and experienced in public health. The way in which the investigation was conducted is described in Section I. In Section II the various lines of health work—vital statistics, communicable disease control, maternity hygiene, etc.,—as conducted in all the cities, furnish a valuable analysis. Sketches of the health work in the individual cities are given in Section III. The final section is devoted to "A Proposed Plan of Organization of Community Health Work for a City of 50,000 Population." This very important report is exceedingly readable and interesting, in addition to fulfilling its primary purpose of being an analytical reference book and developing a practical program of modern municipal health work.

American Society for Testing Materials—Tentative Standards, 1925.—Published by the Society. 1315 Spruce Street, Philadelphia. October 23, 1925. 876 pp. Paper, $7.00; cloth, $8.00.

The 194 tentative standards contained in this volume relate to steel, ferro-alloys and wrought iron; nonferrous metals; cement, lime, gypsum and clay products; preservative coatings; petroleum products and lubricants; road materials; coal and coke; timber; waterproofing; insulating materials; shipping containers; rubber products; textile materials; slate; miscellaneous. It is understood that these proposed standards are published for one or more years in order to elicit criticism from those active in the field of engineering materials, before they are formally adopted by the Society. The specifications and methods of test here presented embody the latest thought of the committees on the subjects covered, and are now being applied in the industries.

The Phantom Public.—By Walter Lippmann. Harcourt, Brace and Company, New York. 1925. 205 pp. $2.00.

This volume is the author's answer to the question: Can the majority rule? It is a study of the theory of popular government—of the actuality of public opinion as a controlling power. Mr. Lippmann considers the ideal of the "omnicompetent, sovereign citizen" as unattainable, even with all the remedies that have been applied to bring it to pass. The private citizen cannot possibly be sufficiently well informed to make his opinion of value as to all public affairs, nor can he do more than support or oppose those who are responsible for actually doing the public work. Public opinion is concerned only with the crises of problems, and ceases to be concerned when some workable adjustment of the situation has been secured which enables the people to resume their habitual processes. The ideal of public opinion is to discern, and favor the action of those who can deal adequately with the crises, those who can maintain a regime of law, contract, and custom. Tests are described by which the author believes the public may determine whether the rule is defective and be able to recognize the reformer, quickly and without real understanding of the problem.

A Selection of Cases on the Law of Municipal Corporations.—By Allen B. Flouton, Professor of Law. Published by the Brooklyn Law School. 1925. 250 pp. $2.50.

A text-book which aims to present to the law student the fundamentals of the law of municipal corporations as stated in opinions of the Court of Appeals of the State of New York and in opinions of the lower courts which have been reviewed by the Court of Appeals.

Sewer and Water-Supply Systems—State Health Department Requirements, New Jersey.—Rules and Regulations for Preparation and Submission of Designs for Sewer Systems and Sewage Treatment Works and Water-Supply Systems and Water Purification Works. 1913, revised 1925. Handy size. 22 pp. (Apply to State Department of Health, Trenton, N. J.)

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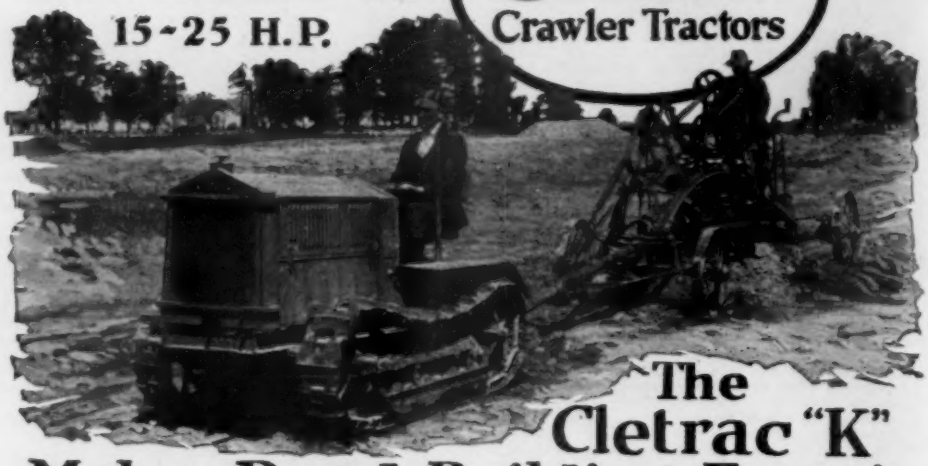

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Conferences, Committees, Conventions, and How to Run Them.—By Edward Eyre Hunt. Harper & Brothers, New York. 1925. XIV + 218 pp. $2.50.

This book answers the practical questions that arise in planning, organizing, and directing all kinds of meetings, large and small. The purpose of the gathering must be determined first, and what form of action it is to take. When and where the meeting should be held, who should call it, and how long ahead; program making; appointment of committees, and their procedure; conducting the meetings; handling the publicity; financing the undertaking; and all the details of preliminary work and of the means of securing harmony and definite action on essential points—these are dealt with convincingly. Not only trade conventions and conferences are covered, but also technical, religious, and diplomatic conferences. Experience of a high order is back of the principles laid down in this volume. The appendices give significant material from actual meetings, also a bibliography.

County Government and Administration in Iowa.—Edited by Benjamin F. Shambaugh. Published by the State Historical Society of Iowa, Iowa City, Iowa. 1925. VIII + 716 pp. $3.00.

Volume IV of the Iowa Applied History Series. The eighteen chapters are written by eight different authors and not only present the organizations, functions, powers, and duties of the various divisions of Iowa county government and administration, but also show the results of personal observation of the county work. The outline of the material, as given in the various chapter heads, is as follows: Definition of the County in Iowa; The County Board of Supervisors; Auditor; Treasurer; Recorder; Clerk of the District Court; Attorney; Sheriff; Coroner; Superintendent of Schools; Administration of Justice; Welfare Work; Administration of Highways; Taxation and Finance; Drainage Districts in Iowa; County Administration of Health; The County and Elections; Reorganization of County Government in Iowa.

The State Police: Organization and Administration.—By Bruce Smith, National Institute of Public Administration. The Macmillan Company, New York. 1925. XIV + 281 pp. Maps, charts. $2.50.

Certain states maintain a system of police patrol that is more like the police systems of Europe than the typical American police department. Mr. Smith has made a very careful study of the problem of police patrol in these states and in Canada, by close, personal observation and by examination of the statutes and other printed material. He presents the facts of organization and administration as evidence which may be of service to legislators and administrators, if longer experience shows the state police to meet the conditions of the larger law-enforcement problems of the future. The comparative absence of politics is a significant element in state police administration and unified and responsible control of personnel makes for a competent force. This is an authoritative book, of great importance to students of both urban and rural police protection.

Community Civics for New York State.—By Grace A. Turkington, A. M., and James Sullivan, Ph.D. Ginn and Company, Boston. 1925. XV + 532 + LXX pp. Illustrated. $1.48.

A text-book for ninth-year civics, emphasizing natural resources, and labor. It is designed to give the pupils a knowledge of the principles and machinery of government, at the same time making plain that hard work has changed the natural wealth of the country into things that make for well-being, thus forming a basis for local, state, and national government; that what we have and continue to have and gain depends on how hard we work; and that changes in government should be made with care, to meet changes in life. This is an inspiring presentation of the facts and ideals of life in home, school, community, and wider circles. Such a chapter, for instance, as "Finding Work for Oneself and Providing Work for Others" is of definite value in the building of character and social efficiency.

Teaching Health in Public Schools.—By Arline McDonnold, R. N., Temple, Texas. VI+84 pp. 1925. Apply to author. $1.50.

A condensed text for teachers, showing how to stimulate and maintain the interest of children in keeping well and gaining in health and strength. The health activities of the county are included in the plan of work, and the children are taught to realize the importance of the extermination of flies, mosquitoes, and rats.

Cooperative Housing.—A selected bibliography on this subject, published in the 4-page *Bulletin* of The Russell Sage Foundation Library for October, 1925. 10 cents. (Apply to Frederick Warren Jenkins, Librarian, 130 East 22nd Street, New York.)

How to Plan a Convention.—By P. G. B. Morriss. The Drake Publishing Company, Chicago. 1925. 153 pp. $2.00.

The purpose of any industrial convonton is to make the industry serve the public better. To this end, it must show the progress that has been made, which includes equipment, materials and supplies, and successful methods. The place chosen is stated to be the most important factor in the success of the convention. The points to be considered in choosing it are explained in this book; proper and improper methods of financing conventions; a preliminary schedule of the duties of a convention executive; committees and their work; programs, speakers, entertainment features; transportation and reception arrangements, relations with hotels—all are considered in the light of practical experience and good judgment. "The Troubles of Jones," a story given at the end of the volume, shows how easily mistakes can be made when emergencies arise that upset the plans of a convention executive, and how readily the situation may be controlled if common sense and standardized practice prevail.

Municipal Aid to Music in America.—By Kenneth S. Clark. National Bureau for the Advancement of Music, 45 West 45th Street, New York. 1925. 297 pp. Illustrated. $2.00 postpaid.

An exposition and analysis of the findings in a survey made by the National Bureau for the Advancement of Music. The chapter heads are: Our European Inheritance; Origin of Present Movement; What Our Cities Might Do; Permissive Legislation; Analysis of the Survey; Some Typical Music Systems; Extracts From Local Reports. This is a complete handbook, showing what is being done and what can be done in this field, and just how to go about it. The chapter on typical music systems includes special articles from Baltimore, Philadelphia, Flint, Mich., Chicago, Wilmington, Del., Long Beach, Calif., Pittsburgh, Portland, Maine, St. Louis, and San Francisco, from those in charge of various manifestations of the development of municipal music.

Safeguarding Funds—Financial and Fiduciary Matters.—Edited by Alfred Williams Anthony, Chairman, Committee of Financial and Fiduciary Matters, Federal Council of Churches; Robert L. Kelly, Executive Secretary, Council of Church Boards of Education; and Lewis B. Franklin, Vice-President and Treasurer, National Council of the Protestant Episcopal Church. Published by J. E. Stohlmann, 129 Park Row, New York. 1925. 130 pp. $1.50 postpaid.

The papers in this volume were presented at a conference of treasurers, financial secretaries and others intimately connected with the administration of funds, at Atlantic City, N. J., February 16-18, 1925. The principal chapter heads are: Charging Off Depreciation; Undesignated Legacies; Annuities; Trusts; Building Up Endowments; Security of Investments; Ethics Involved in Investments; Legislation; Canons of Wise Public Giving; Cooperation with the Bar and with Banks; Better Wills; Gifts Through Insurance; Promotional Campaigns and Publicity. The articles are by experienced legal and financial advisers.

The Children's Bureau: Its History, Activities and Organization.—By James A. Tobey. The Johns Hopkins Press, Baltimore, Md. 1925. XII+83 pp. $1.00.

This is No. 21 of the Service Monographs of the United States Government, published under the auspices of the Institute for Government Research, Washington, D. C. It is wholly descriptive, not critical, and is designed to give the public a knowledge of the organization and operations of the Bureau which will stimulate interest in the Bureau and make it of greater service.

Commonwealth Fund Program for the Prevention of Delinquency.—Progress Report, published by the Joint Committee on Methods of Preventing Delinquency, 50 East 42nd Street, New York, September 25, 1925. 47 pp. This report covers the four years since 1921 in carrying on the activities of the five-year demonstration Program in child guidance and visiting teacher work. These activities are administered by four cooperating organizations with the aid of appropriations granted periodically by the Commonwealth Fund. (Apply to Graham Romeyn Taylor, Executive Director of the Joint Committee.)

The Tax Situation in El Paso County, Colorado.—A series of news articles on this subject prepared by Don C. Sowers, Secretary of the Bureau of Business and Governmental Research, Extension Division, University of Colorado, Boulder, Colo., and published in *The Gazette and Telegraph*, Colorado Springs. The articles are gathered together in the supplement of this newspaper for September 22, 1925. They present an exhaustive survey of the conditions covering the ten-year period during which the tax burden of the city has increased. (Apply to the newspaper.)

Laid in 1891–

Relaid, other side up, in 1924–

–who can say when this vitrified brick pavement will finally complete its usefulness?

THE background of the illustration at the top of this page is an actual photograph of a typical section of the surface of the principal business thoroughfare of Sunbury, Pa. The brick on this street, a main traffic route of the city, was originally laid in 1891, 34 years ago. In 1924 it was taken up and relaid. The perfect condition of the relaid surface shows clearly in the photograph. Could Sunbury—or any other community—have made a better paving investment? Can your community—*right now*—do better than to pave with vitrified brick, the pavement with salvage value built in it?

Pave With VITRIFIED Brick

THE PAVEMENT THAT OUTLASTS THE BONDS

NATIONAL PAVING BRICK MANUFACTURERS ASSOCIATION, ENGINEERS BLDG., CLEVELAND, OHIO

Cooperative Relations Between Official and Unofficial Health Agencies.—By S. W. Welch, State Health Officer of Alabama. Reprint No. 981 from the *Public Health Reports*, December 26, 1925. An address given at the Twenty-second Annual Conference of State and Territorial Officers with the United States Public Health Service, at Chicago, June 11-13, 1924. 9 pp. A definite plan by which these agencies may cooperate in a division of labor in joint activities; with an analysis of the difficulties and the way to overcome them. 5 cents. (Apply to Government Printing Office, Washington, D. C.)

A Preliminary Street Plan for Des Moines, Iowa.—The first of a series of reports of surveys authorized by the Zoning Commission of Des Moines preliminary to the preparation of a sound zoning plan. 68 quarto pp. Maps, charts, tables. Prepared by Harland Bartholomew, city plan engineer, of St. Louis, and his associates. The cost of remedial street work already undertaken in Des Moines is emphasized and presents a strong argument for the proposed systematized arrangement of the streets having a city-wide or community importance. An effective series of plates brings out the various points of characteristics, growth, and development that have a bearing upon the problem. (Apply to the Zoning Commission.)

Reasonable Budgets for Public Libraries and their Units of Expense.—By O. R. Howard Thomson, Librarian, The James V. Brown Library, Williamsport, Pa. Published by the American Library Association, 86 East Randolph Street, Chicago, Ill. 1925. 44 pp. This is an enlivening and practical discussion of the subject. "How to figure costs for a city of 30,000 population" is the main section, and there is other illuminating material which makes clear the relation of the library to the community. Two of the Appendices give tables of salary statistics for large and medium-sized public libraries. 80 cents; paper, 50 cents. (Apply to the Association.)

New York State Council of Parks.—First Annual Report. October, 1925. 77 pp. Views, maps, charts. The State Council of Parks was created to coordinate the various scattered state park agencies, as an essential part of the unified state park program initiated in 1923. This very attractive booklet presents the principles of New York State park planning, and the activities and plans of the Council and the regional park commissions, also the rules and regulations and the organization of the Council, and the membership of the regional commissions.

South Carolina Conference of Social Work.—Proceedings of the Fifteenth Annual Meeting, held at Coker College, Hartsville, S. C., June 4-6, 1925. *Quarterly Bulletin* published by the State Board of Public Welfare, 304 Palmetto Building, Columbia, S. C. June, 1925. 148 pp. Besides the group meetings on child welfare, Travelers Aid Societies, public health, family welfare, and the Indeterminate Sentence Act, there were discussions at the general sessions on County Councils of Social Work; The Social Conscience of South Carolina as Expressed Through Its Penal Institutions; two papers on taxation; Recruiting for Public Welfare; and The Worker's Need of Play. (Apply to the publishers.)

Survey of Public Health Nursing in the State Departments of Health.—Compiled by Lucy Minnigerode, Superintendent of Nurses, United States Public Health Service. Reprint No. 978 from the *Public Health Reports*, December 12, 1924. 28 pp. Covering the following: to what extent there is a uniform standard for duties; the educational qualifications, experience, and pay; how the nursing work of the health departments is coordinated with voluntary agencies in order to avoid duplication of work and waste of time and effort; and other pertinent facts relating to public health nursing. The survey covers 44 states, Alaska, the Philippine Islands, Hawaii, and the District of Columbia. 5 cents. (Apply to the Government Printing Office, Washington, D. C.)

Salaries of City Officials in Wisconsin, 1925.—Compiled by Lorna L. Lewis, Librarian of the Municipal Information Bureau, University Extension Division, University of Wisconsin, Madison, Wis. Information Report No. 44 of the Bureau. September, 1925. 11 mimeographed pp. Tables, with introduction. Covering all the 141 cities of the state. Apply to Ford H. MacGregor, Chief of the Bureau.)

Gas Hazards in Street Manholes.—By S. H. Katz, Associate Physical Chemist, Pittsburgh Experiment Station, Bureau of Mines, Department of Commerce, and E. G. Meiter and J. J. Bloomfield, Assistant Chemists, Bureau of Mines. Serial No. 2710, Reports of Investigations by the Bureau. October, 1925. 20 mimeographed pp. Tables. (Apply to the Bureau, Washington, D. C.)

City Health.—Where Does Your City Stand?—The November, 1925, issue of the *Survey Graphic*. 80 quarto pp. Illustrated. Outlining and interpreting the public health movement as a function of American city government. Dr. Haven Emerson is the editor of this number and the author of the opening article, "The Robust City." The issue is edited and published with the cooperation of the American Child Health Association, the American Public Health Association, the American Social Hygiene Association, the Metropolitan Life Insurance Company, the Milbank Memorial Fund, the National Organization for Public Health Nursing, the National Health Council, and the National Tuberculosis Association, besides other organizations, officials, and voluntary health workers. The topics covered throughout the issue are child and family welfare, the law and lawbreakers, the conquest of disease, the promotion of health, organizing social forces, town planning, the city community, immigration and race relations, school and community, industrial relations, peace and international relations, motives and ideals.

Directory of City Officials and Index to Kansas Cities.—Bulletin No. 54 published by the League of Kansas Municipalities, Lawrence, Kans. July 1, 1925. 100 pp. Including population, dates of incorporation and of regular council meetings, occupations of city councilmen, salaries of city officials, policemen and firemen, number of policemen and firemen, and directory of public improvements. $5 each; $50 per dozen. (Apply to the League.)

Cleveland Traffic.—Third Traffic Report of the Cleveland Automobile Club. September 19, 1925. Presented to the Fourteenth National Safety Congress, 30 quarto pp. The second of the Club's traffic studies outlined a comprehensive traffic system for the city. This third report is based upon a careful checking-up of the actual results of the program, showing that it is beginning to reduce accidents and to relieve congestion. Emphasis is laid upon a driver's license law, and the establishment of a Safety Engineering Bureau in the Police Traffic Department, with proposed legislation necessary to that end. (Apply to the Club, at The Hollenden, Cleveland, Ohio.)

The London County Council and What It Does for London.—Six pamphlets: Public Health, 48 pp., 6d.; London Parks and Open Spaces, 115 pp., 1s.; Housing, 36 pp., 1s.; The Londoner's Education—Its History and Development, 58 pp., 9d.; The London Ambulance Service, 32 pp., 6d.; The London Fire Brigade, 52 pp., 6d. Views, maps. Published by Hodder & Stoughton Ltd., publishers to the University of London Press, Ltd., 17 Warwick Square, London, E. C. 4, England. 1924 and 1925. In his Foreword, Montagu H. Cox, Clerk of the Council, presents the series as designed to render easy and natural a full general knowledge of London's administration. (Apply to the publishers.)

Town Planning in Great Britain, Europe, and America.—Three reports by Sir John Sulman, Honorary Commissioner for New South Wales at the International Town-Planning Conference held at Amsterdam, July, 1924, submitted in January, 1925, to Hon. Sir. George Fuller, K. C. M. G., Premier of New South Wales. Printed by order of the Legislative Assembly of New South Wales. Including interesting accounts of the author's observations in a number of American cities, as well as the garden cities and villages of England, and a few cities on the Continent. 11 large pp. 10d. (Apply to Alfred James Kent, Government Printer, Sydney, New South Wales.)

Southern Commercial Secretaries' Association.—Proceedings of the Eighteenth Annual Meeting, held in Biloxi, Miss., June 15-17, 1925. 134 pp. Interesting papers and discussion on various problems of administration and industrial, agricultural, and civic work of commercial organizations. The topics discussed include city planning and zoning, interracial cooperation, housing and health work. (Apply to Burke Hoogood, Secretary-Treasurer, Durham, N. C.)

Smallpox.—A Preventable Disease.—Published by the American Association for Medical Progress, Inc., 370 Seventh Avenue, New York. 20 pp. This pamphlet has just been revised and now includes the 1924 smallpox statistics for the United States, and the figures for the first six months of 1925. A striking comment on anti-vaccination sentiment and its tendency. (Apply to Benj. C. Gruenberg, Managing Director of the Association.)

Louisville, Ky.—Your City Government.—A review of the work of the present city administration, Huston Quin, Mayor. By Charles Roser, Auditor, Public Utilities Bureau. Published by the city of Louisville for the information of the taxpayers. 1925. 63 pp. (Apply to the author.)

Art Jury, Philadelphia.—Fourteenth Annual Report of this branch of the city government, covering the proceedings during 1924. 47 pp. Illustrated. (Apply to Andrew Wright Crawford, Secretary.)

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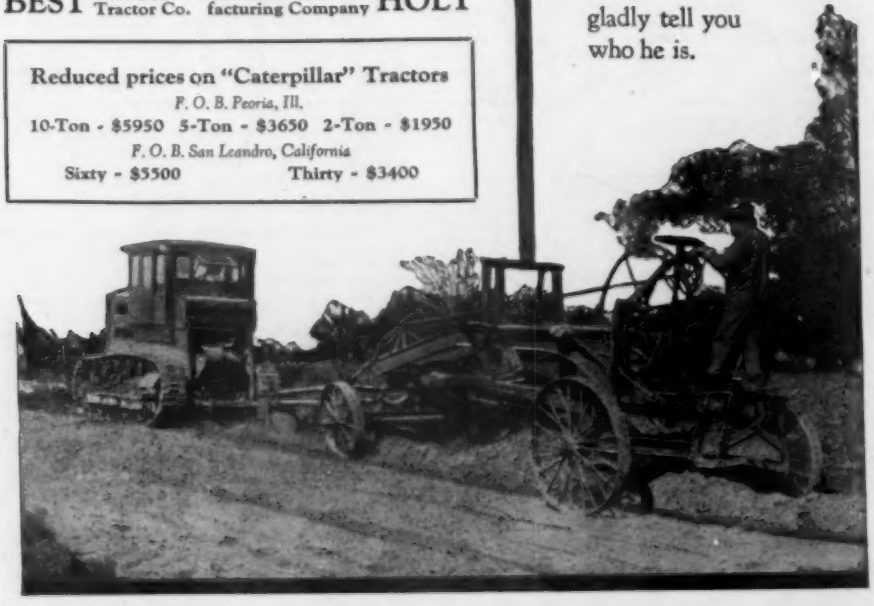

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Financial Statistics of Cities Having a Population of Over 30,000: 1923.—Issued by the Bureau of the Census. Covering 248 cities, showing their financial transactions, the assessed valuation of taxable property, and the taxes levied thereon in 1923, and their indebtedness and specified assets at the close of that year. 571 pp. Tables. $1.00 (buckram). (Apply to Government Printing Office, Washington, D. C.)

The City Parks Association of Philadelphia.—Thirty-sixth Annual Report of the Association, for 1924. 144 pp. Many interesting illustrations. The report describes notable developments that promise much for the future of Philadelphia. (Apply to Andrew Wright Crawford, Recording Secretary of the Association, Girard Building, Philadelphia, Pa.)

The Civic Club of Philadelphia.—Thirty-first Annual Report, 1924-1925. An interesting account of the work of a club that is never idle. It was at the thirtieth annual meeting of the Club that the subject of regional planning was presented by Thomas Adams, General Director of Plans and Surveys of the Committee on the Regional Plan of New York and Its Environs; later the subject of a regional plan for Philadelphia and vicinity was taken up through the initiative of the Club, and it is now being actively pushed. (Apply to Miss Claire B. MacAfee, General Secretary, 1300 Spruce Street, Philadelphia, Pa.)

The Promotion of the Welfare and Hygiene of Maternity and Infancy.—An account of the administration of the Shepard-Towner Act, of November 23, 1921, for the fiscal year ended June 30, 1924. Publication No. 146 of the Children's Bureau of the U. S. Department of Labor. Prepared under the direction of Dr. Florence E. Kraker, Associate Director of the Maternity and Infant-Hygiene Division of the Children's Bureau. This Act of Congress makes available to the states, if matched by state funds, Federal aid for reducing maternal and infant mortality and promoting the health of mothers and infants. 56 pp. 10 cents. (Apply to Government Printing Office, Washington, D. C.)

Fairmount Park Association, Philadelphia.—Fifty-third Annual Report of the Board of Trustees and the Proceedings of the Fifty-third Annual Meeting of the Association. Covering the progress of 1924. 96 pp. Well illustrated. (Apply to Andrew Wright Crawford, Executive Secretary of the Association, 320 South Broad Street, Philadelphia, Pa.)

Public Welfare and the Community.—A statement on this subject as it relates to the North Carolina plan of public welfare, issued, February 1, 1925, for the North Carolina Federation of Women's Clubs, by the Bureau of Public Discussion, University Extension Division. Prepared through the cooperation of the University School of Public Welfare, the State Board of Charities and Public Welfare, and the Department of Public Welfare of the State Federation of Women's Clubs. "Public welfare is no longer thought of in the old terms of merely charities and corrections, but as a very essential service toward the development of human adequacy." 53 pp. Apply to Extension Division, University of North Carolina, Chapel Hill, N. C.)

Recreation in Wisconsin Cities, 1924.—Compiled by Lorna L. Lewis, Librarian of the Municipal Information Bureau, University Extension Division, University of Wisconsin, Madison, Wis. Information Report No. 43 of the Bureau. September, 1925. 5 mimeographed pp. Tables, with introduction. Covering all the cities of Wisconsin. (Apply to Ford H. MacGregor, Chief of the Bureau.)

Reports Received

CHICAGO, ILL.—Annual Reports, Municipal Court, December 4, 1921, to November 30, 1924

CHICAGO, ILL.—Annual Report, Department of Public Works, 1924

COOK COUNTY, ILL.—Annual Report, Auditor, Forest Preserve District, 1924

MINNEAPOLIS, MINN.—Budget for 1926, by Board of Estimate and Taxation

NEW YORK STATE.—Annual Report, Industrial Commissioner, year ended June 30, 1925

PAWHUSKA, OKLA.—Annual Report of the City Under the Managerial Form of Government, year ending June 30, 1925

SALT LAKE CITY, UTAH.—Annual Report, City Engineer, 1924

SHREVEPORT, LA.—Biennial Report, 1923, 1924

TAUNTON, MASS.—Annual Report, Water Commissioners, 1924

WILMINGTON, DEL.—Annual Report, Bureau of Fire, 1924

On the Calendar of Conventions

DECEMBER 4-5.—ASBURY PARK, N. J.
New Jersey Sanitary Association. Annual meeting. Secretary, Edward Guion, M. D., Box 418, Atlantic City, N. J.

DECEMBER 8.—NEW YORK.
Society of Terminal Engineers. Annual meeting. Secretary, Charles H. Newman, 30 Church Street, New York.

DECEMBER 9-10—WASHINGTON, D. C.
National Rivers and Harbors Congress. Annual convention. Secretary, S. A. Thompson, 824 Colorado Building, Washington, D. C.

DECEMBER 10.—NEW YORK.
American Engineering Standards Committee. Annual meeting. Secretary, P. G. Agnew, 29 West 39th Street, New York.

DECEMBER 10-11.—CHICAGO, ILL.
Association of American Municipal Organizations. Annual conference. Executive Secretary, John G. Stutz, Lawrence, Kans.

DECEMBER 28-31.—NEW YORK.
American Sociological Society. Annual meeting. Secretary, E. W. Burgess, Faculty Exchange, University of Chicago, Chicago, Ill.

DECEMBER 28-31.—NEW YORK.
National Community Center Association. Annual meeting. Secretary, LeRoy E. Bowman, 503 Kent Hall, Columbia University, New York.

JANUARY 6-7.—RICHMOND, VA.
American Forestry Association. Annual meeting. Executive Secretary, Ovid M. Butler, 1523 L Street N. W., Washington, D. C.

JANUARY 8-9.—SALEM, MASS.
New England Association of Commercial Executives. Secretary, Earl J. Arnold, Chamber of Commerce, Bristol, Conn.

JANUARY 11.—CHICAGO, ILL.
International Association of Street Sanitation Officials. Annual meeting. Secretary, A. M. Anderson, 10 South La Salle Street, Chicago, Ill.

JANUARY 11-15.—CHICAGO, ILL.
American Road Builders' Association. Annual convention and Road Show. Secretary, Ethel A. Birchland, 37 West 39th Street, New York.

WEEK BEGINNING JANUARY 18.—FORT WORTH, TEX.
Texas Section of Southwest Water Works Association. Eighth annual short school for water-plant operators. Secretary, V. M. Ehlers, Sanitary Engineering Division, State Board of Health, Austin, Tex.

JANUARY 20-21.—WASHINGTON, D. C.
National Conference on Outdoor Recreation. Executive Secretary, Arthur Ringland, 2034 Navy Building, Washington, D. C.

JANUARY 20-22.—NEW YORK.
American Society of Civil Engineers. Annual meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

JANUARY 27-29.—BUFFALO, N. Y.
American Society of Heating and Ventilating Engineers. Annual meeting. Secretary, F. C. Houghton, 29 West 39th Street, New York.

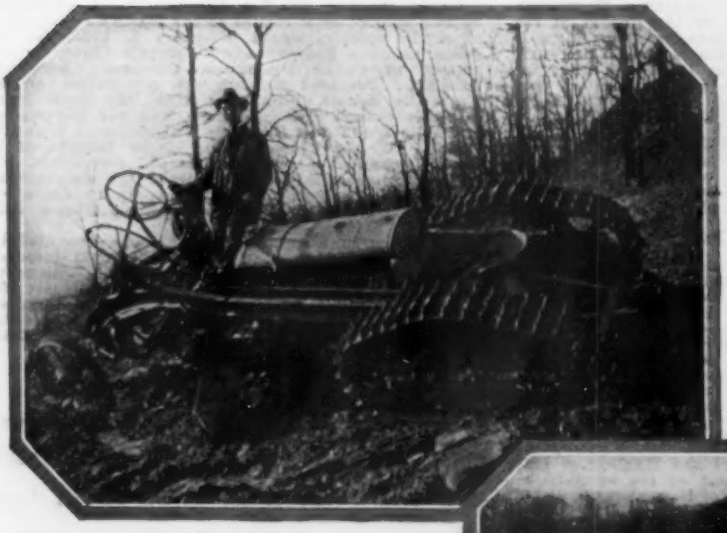
JANUARY 27-29.—TORONTO, ONT.
Engineering Institute of Canada. Annual meeting. Secretary, R. J. Durley, 176 Mansfield Street, Montreal, Que.

JANUARY 28-30—NEW YORK.
Second National Better Films Conference. Address: National Board of Review of Motion Pictures, 70 Fifth Avenue, New York.

FEBRUARY 17-19.—SYRACUSE, N. Y.
Association of Highway Officials of the North Atlantic States. Annual Meeting. Secretary-Treasurer, A. Lee Grover, State Highway Commission, Trenton, N. J.

FEBRUARY 21-25.—WASHINGTON, D. C.
National Education Association, Department of Superintendence. Annual meeting. Secretary, Dr. S. D. Shankland, 1201 16th St. N. W., Washington, D. C.

FEBRUARY 22-28.—CHICAGO, ILL.
American Concrete Pipe Association. Annual convention. Secretary, M. W. Loving, 111 West Washington Street, Chicago, Ill.



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News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

New Type of Jack Introduced

A lifting device which has special advantages for fire apparatus and other heavy motor trucks operated by municipalities is the Pedersen "Oiljak," now being placed on the market by the Oil Jack Company, Inc., of 1457 Broadway, New York. This new jack is said to embody novel applications of principles long recognized as of prime importance in the design of lifting devices and to overcome difficulties which have prevented successful use of these principles in the past. The sectional view herewith explains the construction of the "Oiljak" and its operation.

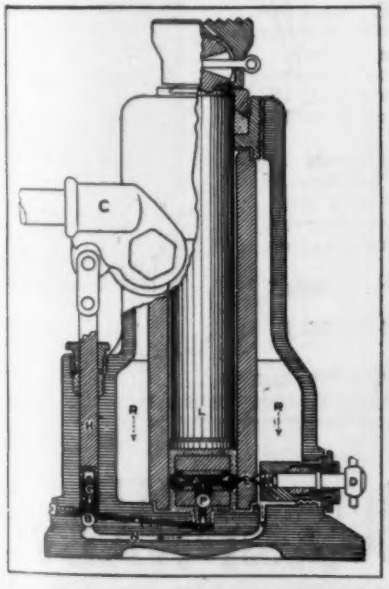
Raising the handle of the jack, which fits into socket "C," raises pump plunger "H," drawing oil from reservoir "R" through channel "N" and ball check valve "B" into chamber "G." Lowering the handle compresses the oil in chamber "G," seating valve "B" and forcing oil through channel "M" past ball check valve "P" into chamber "A," causing plunger "L" to raise and lift the load. To lower, slightly turn the needle valve "D." This opens outlet "E" and permits oil to travel back again to reservoir "R."

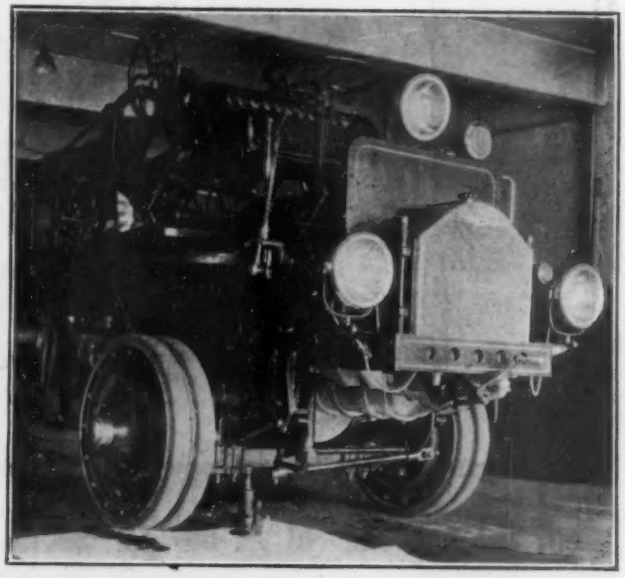
There is always absolute control of lifting of load the instant you stop pumping at any point of stroke, either up or down. The load positively holds its position and is always under instant control. The needle valve "D" positively controls speed of lowering. Closing the needle valve holds the load at any point.

The oil is not under pressure in reservoir "R," which is in the main casting. Chamber "A," where the pressure occurs, is entirely surrounded by a steel jacket. There is no chance of leakage, expansion, or breakage.

Every detail of construction has been worked out to insure long service even under rough usage. The swivel-head is corrugated and hardened to insure firm grip under load. The ram is solid steel, 1⅜ inches diameter, heat-treated and ground. Adjustable oil-retaining packings prevent leakage. The rocker arm is rigidly constructed and provided with a positive stop, oscillates on a heat-treated fulcrum bolt, and projects over the pump stem and thus protects it. The base is 6½ inches in diameter and the entire casting will support many times the rated capacity of the "Oiljak."

With the Pedersen Oiljak, any load within the limit of the jack's capacity can be raised with little effort, steadily, smoothly, and quickly. It also lowers the load without jar or shock and can be instantly stopped at any position. Moreover, the jack may be operated with short, inch-by-inch motions of the handle, if desired. A full stroke is not necessary as in the case of most jacks. This makes the Oiljak particularly practical for cramped quarters or obstructed spaces. In dangerous locations, this jack can be operated at a distance by using a longer handle.





SECTIONAL VIEW OF OILJAK, AND THE DEVICE IN OPERATION UNDER AN AMERICAN-LA FRANCE TRUCK IN THE FIRE DEPARTMENT, WHITE PLAINS, N. Y.

Trinidad over old brick!

Modern, smooth-surface pavements—*at half the usual cost* and with minimum interruption of traffic—are possible where old, worn-out pavements of brick, concrete, macadam or stone are re-surfaced with Trinidad Lake Asphalt.

Photograph shows East Wayne Street—Calhoun to Hanover—at Fort Wayne, Ind., re-surfaced with Trinidad over old brick in 1923—a total of 23,986 square yards.

Trinidad is a native-lake asphalt—not an artificially-produced product. No other type of bituminous paving even approaches it in long-lasting, low-cost service. Nor in attractiveness, ease of cleaning, ease of repair and freedom from noise.

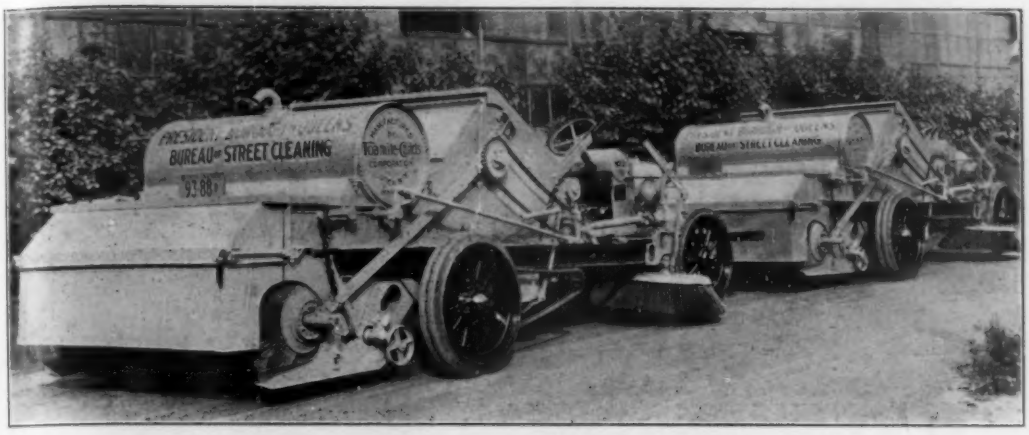
Write at once for Trinidad "service records."

The Barber Asphalt Company

PHILADELPHIA

New York Chicago Pittsburgh St. Louis Kansas City San Francisco

TRINIDAD LAKE ASPHALT



CHILDS SWEEPERS DELIVERED TO NEW YORK CITY

Reducing Street-Cleaning Expenses by Motor Sweepers

City officials seem to be giving more attention than ever before to the reduction of their street-cleaning expenses through the installation of modern motor sweepers.

Utica, N. Y., has recently installed two Childs motor pick-up street sweepers, made by the Foamite-Childs Corporation, Utica, N. Y., and in so doing was able to replace several horse-drawn equipments and many broom men.

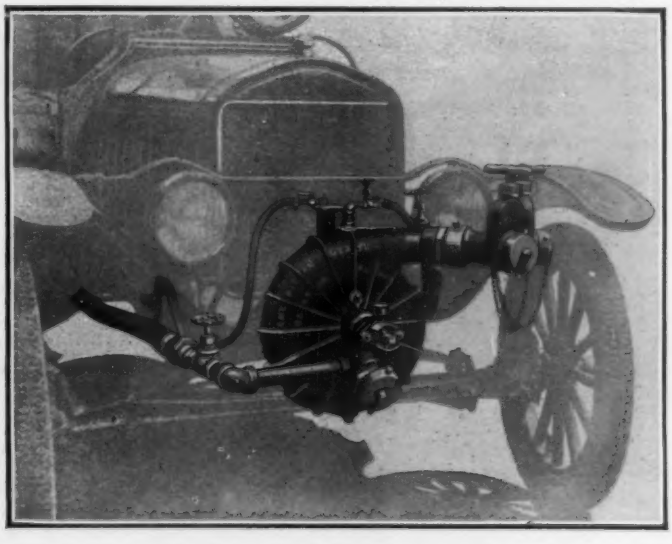
Borough President Maurice E. Connolly, of Queens, recently made formal acceptance of two Childs sweepers for New York City. These sweepers are the first to be used in this section.

Some of the other cities using Childs sweepers are: Hamtramck, Mich.; Port Arthur, Tex.; Elmira, N. Y.; Windsor, Ont.; Cohoes, N. Y.; Massena, N. Y.; Fort Wayne, Ind.; Ford City, Pa., and East Cleveland, Ohio. Palatka, Fla., has just placed an initial order for one machine.

Portable Fire-Pumps for Adequate Protection in Small Towns

A small fire-pump for outlying sections of cities and for towns, villages, and townships where a simple piece of equipment and price and dependable service must be considered, is being made by the American Steam Pump Company, Battle Creek, Mich., in its Barton portable fire-pump. This pump will furnish a satisfactory fire-stream from any source of water-supply available. Many small cities and towns have only low water-pressure systems averaging from 25 to 50 pounds pressure per square inch. This is altogether too low to permit effective work in case of a bad fire. In this case the Barton portable fire-pump can be used as a booster. (See page 703.)

In towns and villages having a limited water-supply, this pump provides sure protection against fire loss. It is easy to operate, as any one who can run an automobile can operate the pump. The pump is light in weight, yet strong enough to withstand the most rigid tests. It is quickly mounted on the front of a car or truck by means of a power-take-off connection, allowing for direct drive with no loss of power in transmission. The pump is quickly primed by an automatic primer. The impellor is of the open type which will handle water containing sand, small pebbles or cinders. This feature is a big advantage where it is necessary to get water from any source of supply, such as in small towns and villages. All parts of the pump are easily accessible, and the ground clearance of the pump as attached is greater than that of the front axle. The motor can be cranked with the pump mounted on the car. The pump is easily drained and is always dry when not in use and thus cannot freeze in transit or in service. The pump is made for mounting either on Ford cars or trucks or lightweight trucks such as the Dodge or Reo.



BARTON PORTABLE PUMPER MOUNTED ON FRONT OF LIGHT-WEIGHT TRUCK

THE Vibrolithic METHOD

Paving America With Vibrolithic

CONSTRUCTION of the first Vibrolithic pavement, back in 1911, marked a new epoch in pavement history. The merits of The Vibrolithic Method were quickly recognized. Rapid progress followed. Today the Vibrolithic organization is represented by 23 sales offices, actively covering 38 states and Canada.

Vibrolithic growth is based on merit—over a period of 14 years, 43 per cent of our business has come from localities that had previously used Vibrolithic. Salesmanship may land the first order, but repeat purchases are based on experience with the article itself.

Notwithstanding the rapid expansion of our organization into new territory during the last three years, 63 per cent of the 1925 yardage is repeat business (an increase of 20 per cent over the 14-year average); over 12 per cent is in newly-developed territory and approximately 25 per cent in new communities, located in territory where Vibrolithic previously had been laid.

In other words, Vibrolithic is enjoying an excellent "repeat" business, healthy expansion in new territory and adding many new localities in developed territory.

Although single cities have laid as much as 500,000 square yards, Vibrolithic progress is not controlled by large areas in the greater centers of population, but is distributed over 218 different localities. Of the towns that have constructed Vibrolithic, 46 per cent have less than 5,000 population; over 16 per cent are between 5,000 and 10,000, and 17 per cent are between 10,000 and 20,000.

Today you will find Vibrolithic on both the east and west coasts, as far north as Vancouver, B. C., and south to San Antonio, Texas.

Write for our Illustrated Booklet A-12,
"Paving America with Vibrolithic."

American Vibrolithic Corporation
INSURANCE EXCHANGE BUILDING DES MOINES, IOWA
SALES OFFICES IN 23 OTHER CITIES

THROWING 270 GALLONS PER MINUTE OVER A FOUR-STORY BUILDING, USING A BARTON PORTABLE FIRE-PUMP WITH 10-FOOT SUCTION

The Swing-Bob a New Piece of Playground Equipment

The Swing-Bob, one of the latest additions to the line of playground apparatus made by the Mitchell Manufacturing Company, 1900 29th Avenue, Milwaukee, Wis., has many features which appeal particularly to younger children. It is a perfectly safe piece of equipment and will accommodate from one to twelve children. It consists of two sets of A frames between which is swung a bob seat 16 feet long, strongly reinforced at the bottom and with a center rail to which the children hold. The bob seat swings back and forth between the A-frames, furnishing plenty of exercise and amusement. It operates easily and quietly on roller-bearing hinges mounted on the steel frames, which are constructed on galvanized steel pipe. The swing rods are of carbon steel.

Improvements in Liberty, N. C.

Spoon & Lewis, consulting engineers, Greensboro, N. C., who are associated with Fay, Spofford & Thorndike, Boston, Mass., have been engaged by the town of Liberty, N. C., to prepare preliminary surveys and estimate for the installation of water and sewerage system. The preliminary work is now in progress.

Ornstein Patent Suit Won by Plaintiffs

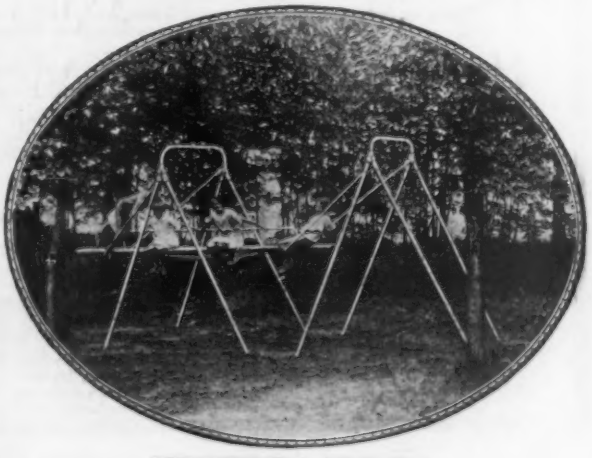
U. S. District Judge D. J. Campbell of the Eastern District of New York handed down his decision on November 10 in the suit of the Electro Bleaching Gas Company and Wallace & Tiernan Company against the Paradon Engineering Company for infringement of the Ornstein patent U. S. No. 1,142,361, which covers the solution feed process of chlorination of water and sewage. Judge Campbell found that the patent was valid and that the apparatus of the defendant infringed the patent. The Electro Bleaching Gas Company is the owner of the patent, and that company prosecuted the suit, making the sole licensee, Wallace & Tiernan Company, a plaintiff with it. The Court in its decision reviews all of the citations of the prior art set up by the defendant and finds that none of them anticipated the Ornstein solution process.

A Compact Blue-Print System

The very compactness and simplicity of the Wickes blue-print system, manufactured by Wickes Brothers, 2017 Water Street, Saginaw, Mich., accounts for its reasonable cost and the large number in use in drafting-rooms where a large or small number of prints are required.

The contact between the tracing and the paper is secured by means of a single slide continuous belt passing around the feed rolls and the metallic cylinder and covering over 92 per cent of its circumference. The tension of this belt is regulated automatically and the light is projected directly in a radial line through the tracing without having to pass through any intervening glass, nor is it deflected by reflectors of any sort. The spirally disposed wires of the cylinder offer much less actual obstruction to the light, according to the manufacturers, than any glass cylinder would, and the light is consequently much closer to the blue-printing paper; in fact, the distance from the light to the paper is only 2 inches around its entire circumference. (See illustration on page 705.)

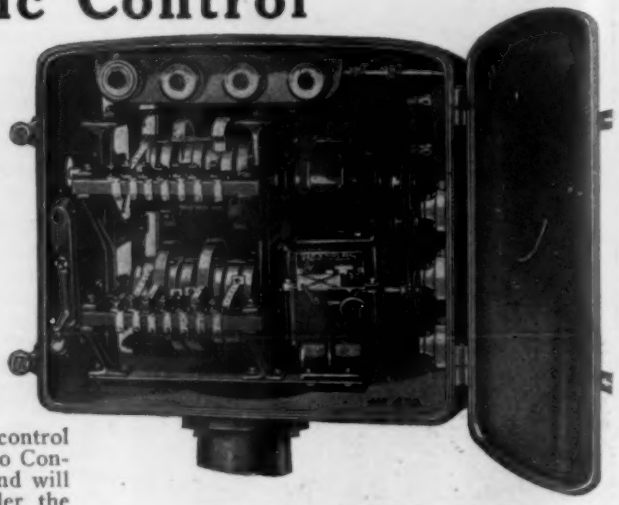
In continuous printing, the paper passes from the light-tight storage compartment, over the feeding table, which is at an angle of 45 degrees, then down to the feeding roll. The blue-print paper and tracing then travel around the printing cylinder, the tracing being delivered to the operator if he so desires, or it can go with the blue-print paper into the storage compartment in the rear of the machine. The printing of separate prints is just as readily accomplished as the ordinary continuous printing. No dark room is required, and the lighting elements are mercury vapor lamps.



THE MITCHELL SWING-BOB

Reco Traffic Control

A reliable control that's giving wonderful satisfaction



Twenty-five years of building flashers for outdoor use, told us many of the problems to meet in designing Reco Controls.

Traffic signal work presents many difficult problems and the control apparatus must be reliable. Reco Controls have stood the acid test and will stand such abuse as will render the average device unusable.

Reco Controls are featured by simplicity, ease of adjustability, convenience of renewals, accessibility of any part, reliability of motor.

We have a special bulletin on traffic controls that's mighty worth reading. Write for it.

REYNOLDS ELECTRIC COMPANY

2663 W. Congress St., Chicago

These twenty-five Heil-equipped Autocars have just completed work on the new Absecon Blvd. leading into Atlantic City.

Have You Ever Used Heil Equipment?

THOSE who have, know how well it can stand the gaff of heavy road-building work. They know how little it costs to keep Heil Hoists and Bodies in service. They know that Heil dumps are on the job, all the time, to do the job right.

Heil steel dump Bodies are built for hauling ashes, rubbish, garbage, cinders, asphalt, sand, gravel, and all material. Heil Hoists mount on any make or model motor truck. Write for Catalog 140 and Ford Bulletin 150.

1242-60 26th Ave. THE HEIL CO. Milwaukee, Wisc.

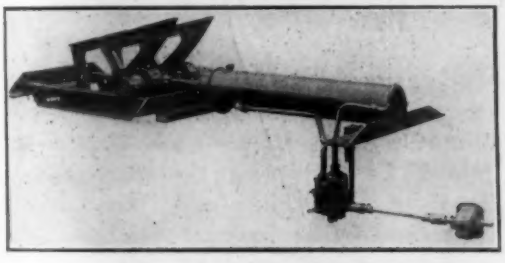
Mfrs. Steel Dump Bodies, Hydro Hoists, Mechanical Hoists, Hand Hoists, Sprinkler Tanks, Compartment Truck Tanks and Storage Tanks of all kinds.

A ONE-MAN BLUE-PRINT MACHINE

A Powerful Underbody Truck Hoist

A powerful underbody truck hoist for dump-trucks which has only three moving parts, a piston, and two pump gears all operating in oil, has been developed by the Wood Hydraulic Hoist & Body Company. The straight-line drive from the power take-off to the pump is very simple and eliminates gears, clutches, sprockets, chains, brackets, and other power-consuming elements.

The Wood gear pump, which is driven by the engine of the truck, pumps oil under pressure into a hydraulic cylinder which forces the piston rod

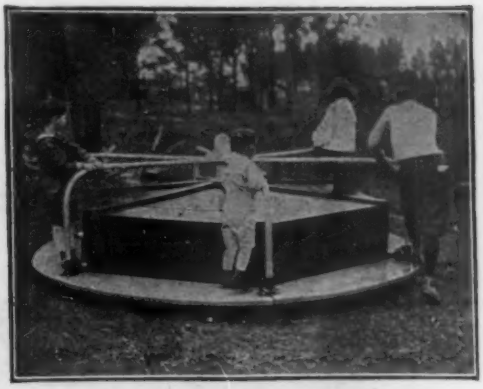


THE WOOD UNDERBODY TRUCK HOIST

outward. The pump draws oil from the opposite or low-pressure end of the cylinder; thus a completely closed system is obtained, with no "breather" outlet to waste oil. The powerful motion of the piston rod is further increased and turned into lifting motion by the rolling wedge action of the steel rollers acting directly on curved cams attached to the underside of the body. The hoist stops automatically at full raised and lowered positions. One simple valve gives the complete control to "raise," lower," or "hold" the body.

A Safe Merry-Go-Round

A merry-go-round which is built to stand years of hard play and which has every feature making it safe for the smallest tot who will be around a playground alone, is manufactured by the American Playground Device Company, Anderson, Ind. This merry-go-round is strong enough to hold all that can ride and is so easy-running that one child can start it and keep it running.



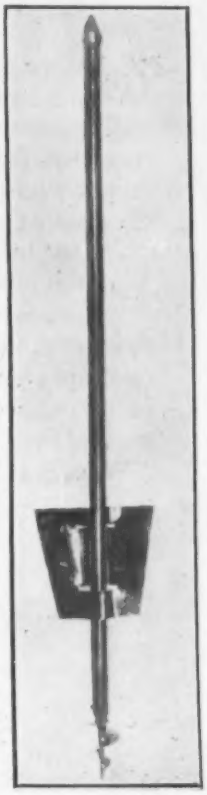
A TRUSTWORTHY MERRY-GO-ROUND

It is equipped with ball and roller bearings, all machine-hardened, insuring long life and perfect balance. There is no dangerous running-track underneath, the machine being run on a solid piece of cold-rolled steel 2⅜ inches in diameter. The footboards are made from 2-inch material and form a complete circle with no protrusions to catch the children when they get on or off. The merry-go-round is shipped in sections, but, because of its simplicity, is easily and quickly erected.

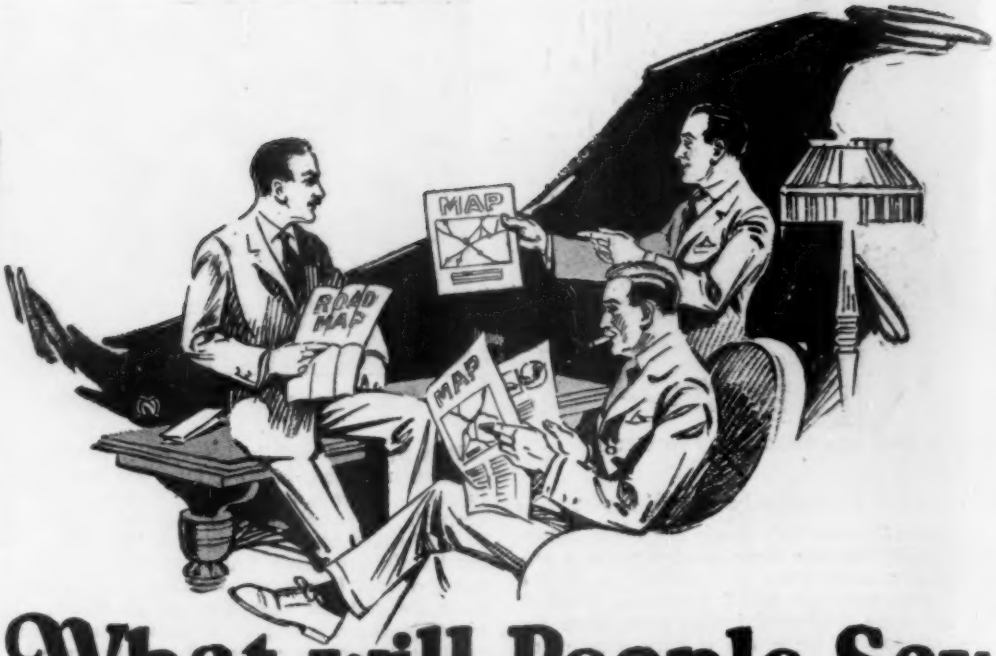
A Handy and Effective Auger Post

A recent and practical development of the corkscrew stake is found in the "One-Minute Auger Post" manufactured by the Ohio Tubular Products Company, London, Ohio.

This post is composed of high-carbon steel tubing into which is securely fastened a spirally pointed malleable iron auger of unique design. This auger provides an easy method of erecting the post in the ground and serves as an anchor when the post is in place. To brace the post in a lateral plane, a sheet steel plate is provided which is attached to the post and driven in to the depth desired. The post is screwed into the earth with the aid of a pipe wrench and when necessary can be removed by reversing the process.



It is particularly adapted for use in erecting highway markers and in connection with playground and athletic equipment, tent stakes and ground anchors.

It is believed that this post can be fully adapted to any conditions where earth anchorage with ease of erection is desired. The service of posts of this type was very extensive during the World War for barbed-wire entanglements, etc.

What will People Say about *Your* Community?

WHEN motorists mingle to compare notes on the season's tours, they seldom talk in half measures. Every town is either a "wonderful little burg—splendid roads," or else "a miserable hole—the roads were awful." For the motorist judges every community by its roads, and he speaks his comments in a language that knows no comparative adjectives.

What is being said about your community by the motorists who drove through last summer? It's a question worth thinking about, for the tourist trade means much to the prosperity of any city or town nowadays.

When next summer comes, will motorists flock to you and spend their money with your merchants, because Smith has advertised your community as "a real town, with wonderful roads?" Or will they plan their itineraries to avoid you because Jones says: "Keep away from ——— unless you want to be buried in mud or smothered with dust?"

Standard Asphalt Road Oils and Stanolind Asphalt will give you roads worthy of the praise of the tourists, and will bring more business to your community Our staff of road engineers will give you advice—without charge—on your road and pavement problems. Write our nearest branch today.

STANDARD OIL COMPANY
(INDIANA)

General Offices: 910 S. Michigan Avenue CHICAGO, ILLINOIS

ILLINOIS	INDIANA	IOWA	S. DAKOTA	N. DAKOTA	MINNESOTA	MISSOURI
Chicago	Evansville	Davenport	Huron	Fargo	Duluth	Kansas City
Decatur	Indianapolis	Des Moines	MICHIGAN	Minot	Mankato	St. Joseph
Joliet	South Bend	Mason City	Detroit	WISCONSIN	Minneapolis	St Louis
Peoria	KANSAS	Sioux City	Grand Rapids	La Crosse		
Quincy	Wichita		Saginaw	Milwaukee		

Everything Underground Between Power House and Lamp

THE Subway Type Regulator permits an underground regulating station. The use of valuable property space for this purpose is now unnecessary.

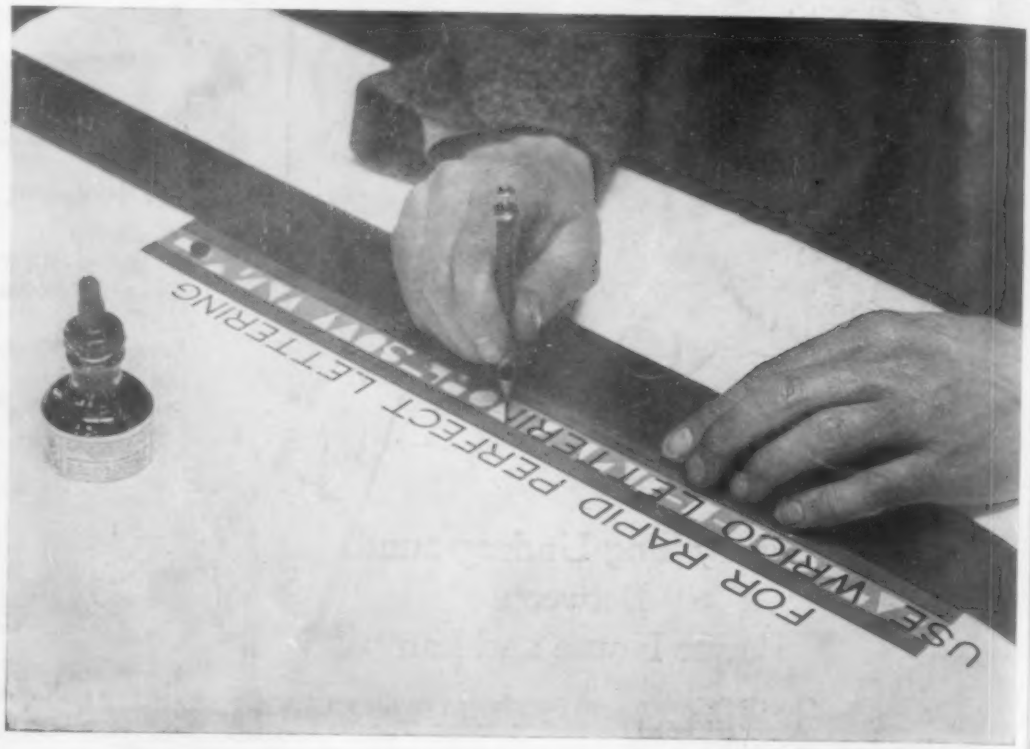
The desire for more attractive cities demands that everything unsightly or inharmonious be removed from the streets. Public utilities have responded by carrying underground the light, heat, and other necessities of modern civilization. Transformers and much other electrical distributing equipment has long since been designed for underground service. The Westinghouse Subway Type Regulator is the last link in the street lighting chain.

The entire street lighting system may now be underground between the power house and the lamp.

Westinghouse Electric & Manufacturing Company
George Cutter Works South Bend, Indiana
Sales Offices in All Principal Cities of
the United States and Foreign Countries

Westinghouse

X85751



VERTICAL WRICO SLANT

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Patents Pending

THESE INSTRUMENTS WILL ENABLE YOUR DRAFTSMEN TO DO BETTER LETTERING THAN CAN BE DONE IN ANY OTHER WAY AND TO DO IT MORE RAPIDLY AND ECONOMICALLY —— THEY ARE SAVING TIME AND IMPROVING THE APPEARANCE OF MAPS AND DRAWINGS IN MANY THOUSANDS OF DRAFTING ROOMS —— INCLUDING MORE THAN 500 CITY, STATE AND COUNTY OFFICES

WE SHALL BE GLAD TO MAIL YOU A COPY OF OUR 1926 CATALOG DESCRIBING ALL SIZES AND STYLES OF WRICO LETTERING GUIDES AND SHOWING COMPLETE SAMPLES OF LETTERING.

THE WOOD-REGAN INSTRUMENT COMPANY, INC.

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